

# Cholera.

Thursday

1. The cause of Cholera must be a material substance.
2. It is almost certainly organic; animalcular or vegetative.
3. Its chief ~~cause~~ <sup>cause</sup> is decomposing animal matter; its necessary conditions, heat and moisture.
4. It migrates across the globe, <sup>without dependence upon human intercourse.</sup>
5. It is transported, principally, through the atmosphere; often, to short distances, by water; rarely, by ships; almost never, by persons or fomites; never by true contagion.
6. Its prevention requires cleanliness, ventilation and disinfection. Perfect local and personal sanitary conditions would render it impossible.

“Potability” not proven.



## Causation of Typhus.

1. Crowd-poison;  
probably also, sewage;  
~~and~~ possibly privy  
emanations.

2. Personal contagion.

## Prevention.

By Ventilation and  
Cleanliness.

(See within)

for Board.

## Typhoid Fever probably requires

an individual or family predispo-  
sition, analogous to the rheumatic,  
or the tubercular, diathesis. It is  
chiefly promoted by impure  
atmosphere, & foul drinking water,  
especially fecal contamination of  
water: also, by mental depression.

It does not exclusively  
depend on transmission from  
person to person by fecal con-  
tamination of water.



## Types of Zymotic Diseases,

- 1 Smallpox - pure contagion -
- 2 Typhus 1. ochleri 2. contagion
- 3 Typhoid 1. ~~proctospor.~~ 2. depress. 3. bad air & water
- 4 Malarial Fever - pure local cause - Autog. by human de
- 5 Miasm Fever - local - promoted by veg. decay especially
- 6 Cholera - local, migratory, - promoted by animal decomp
- 7 Diphtheria, Erysipelas, Puerperal Fever <sup>not well known</sup> - Contag. Mol. change  
part local - part personal  
and precautions in both —



*Diphtheria*  
*Membr. Group*  
*perpetua* *extensor*





# CHOLERA:

FACTS AND CONCLUSIONS

AS TO ITS

NATURE, PREVENTION, AND TREATMENT.

BY

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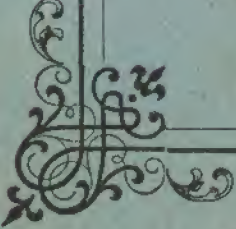
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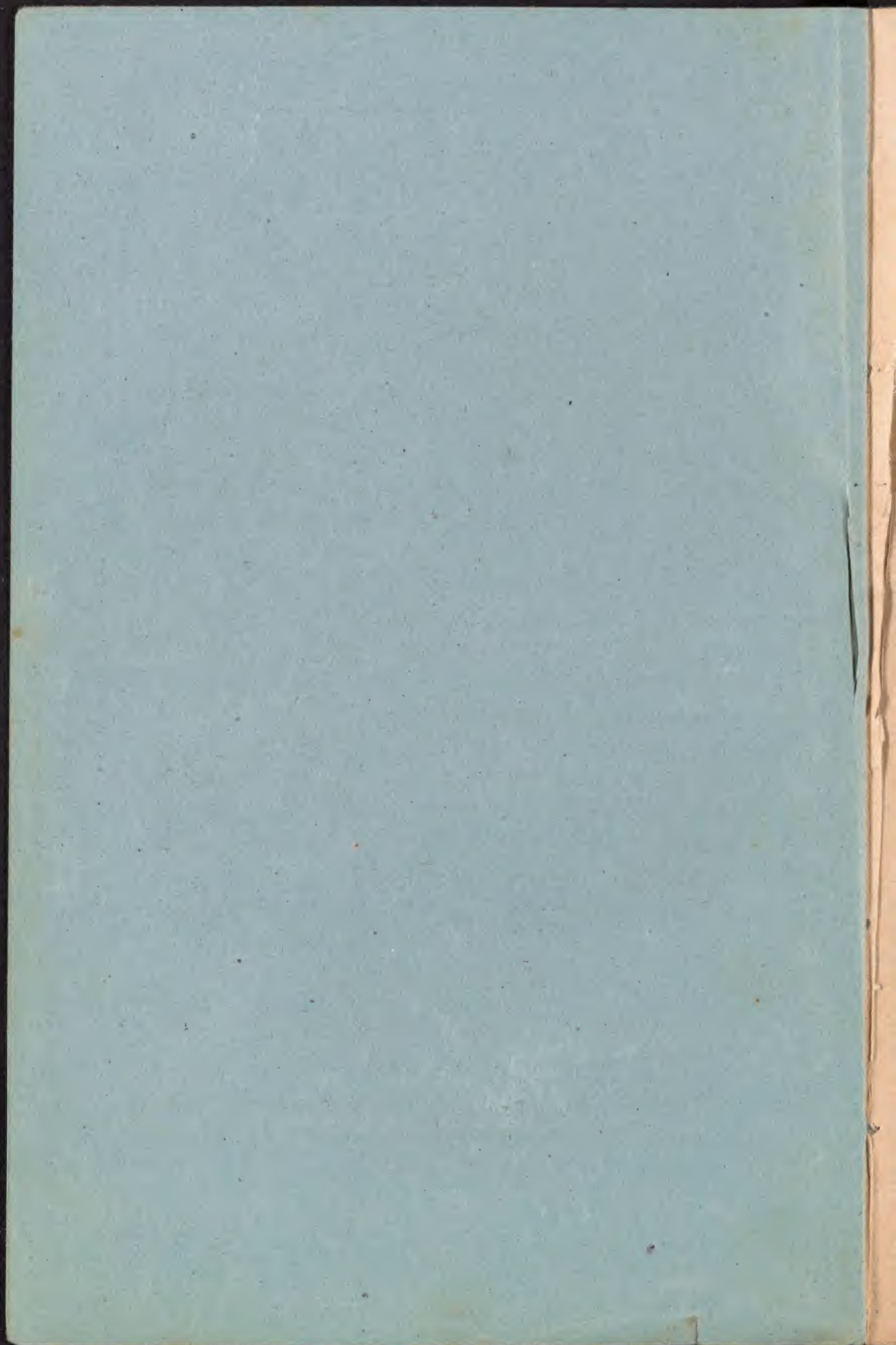
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## ON CHOLERA.

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SOME experience with Cholera, in this city in 1849, 1850, and 1854, and in the latter year at Columbia, Pa., and the perusal of most of what has been written upon the subject, have impressed me with opinions, some of which amount to strong convictions; the truth of which—if they *be* true—is so important as to make it justifiable, if not a duty, to give them publication at the present time.

Without claiming novelty for my views (some of which were published in a medical journal more than ten years ago\*), my purpose is to endeavor to give the results of a careful analysis of the facts, and, if possible, an approach to a consistent theory, with direct practical applications. To this end, it will be best to attempt a brief digest of the subject, in a methodical form.

**Principal Synonyms.** — Epidemic, Spasmodic, Malignant, Algid, Asiatic, Indian Cholera; Cholera Asphyxia, Mort de Chien; in India, *Vishuchi* (vomiting and purging); at Bagdad, *Haouwa* (tornado).

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\* Philada. Med. Examiner, Aug. 1855; On Animal Decomposition as the Chief Promotive Cause of Cholera, etc.



## DEFINITION.

*An acute systemic epidemic disorder (endemic in parts of India), not contagious, but produced under certain local circumstances by an unknown specific cause, which appears to be in rare instances and to a very limited degree portable; the symptoms being, in most instances, a premonitory, painless, and mostly watery diarrhœa of variable duration, followed by vomiting, also watery, and increased diarrhœa, with weakness, coldness, intense thirst, difficulty of breathing, loss of voice, cold breath, cramps, disappearance of pulse, suppression of the action of the kidneys, restlessness, and a blue or livid and shrunken aspect of the skin; which symptoms may end in death in from ten minutes to forty-eight hours—in relief and rapid recovery within twelve hours or more—or, in a partial reaction and low fever (chiefly uræmic), the result of which is either death in a few days, or recovery in a week or two.*

## APPEARANCES AFTER DEATH.

*Rigidity occurs soon; sometimes in less than an hour; generally within two hours. Startling movements of the corpse have been several times noticed; as of a patient, dead with cholera, slowly*



lifting both hands over the chest and joining them ; opening the eyes and rolling them downward, etc. *Increased heat* of the body, cold during the attack, has been sometimes observed after death. Internally, several of the great organs, the brain, spleen, and kidneys at least, are commonly gorged with blood. So are the *right* cavities of the heart ; but the left side of the heart empty or with but little blood, and firmly contracted. The lungs are almost bloodless. The liver varies in appearance ; but the gall-bladder is almost always *full of bile*. The urinary bladder is, constantly, greatly contracted. The stomach and intestinal canal are congested, and swollen ; the late Prof. Horner observed the frequent throwing off of the "epithelial" lining of the canal ; Böhm, of Germany, confirmed this ; Drs. Parkes, Gull, and Lindsay assert it to be a *post-mortem* occurrence.\* The intestinal glands are found considerably enlarged. The *blood* has been carefully examined by Drs. Garrod, Schmidt of Dorpat, and others.† Its water and salts transude into the alimentary canal, with some of the albumen and fibrin ; also *the contents of the blood-cells transude into the serum*. The blood drawn from a vein during life is (as I have seen it) dark, thick, and tarry, scarcely capable of

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\* Edinburgh Med. and Surg. Journal, Jan. 1855.

† Brit. and For. Medico-Chirurg. Rev., July, 1854.



flowing. Schmidt found the amount of oxygen in the blood-corpuscles less than half the normal proportion. The blood is *acid* sometimes in cholera; the reverse of its natural reaction.

The *ganglia* of the "sympathetic" system have been often examined, and are frequently changed in appearance; congested, softened, altered in color; but no *special* change has been *shown* to belong to them in cholera.

### DIAGNOSIS.

Common cholera morbus alone (*absurd* name, hybrid of Latin and Greek; as absurd also is cholera, from the Greek for bile, a cognomen for a disease in which the excreta are remarkable for the *absence* of bile), when severe, resembles epidemic cholera so much as to be easily mistaken for it. The *collapsed* stage of the one, preceding death, is almost identical in appearance with the collapse of the other. But cholera morbus is *caused* by some irritant of the stomach and bowels, and is clearly an affection of *those organs*, not a *toxæmia* or systemic disorder; it is sporadic, *not epidemic*; in it the discharges are always *bilious* at first, and mostly so to the last; collapse in any degree is *rare*, and death, under judicious treatment very uncommon. In all these things, it differs greatly from Asiatic cholera.



## HISTORY.\*

Putting aside some possible resemblance to this disease in descriptions of Aretus and one or two other ancient authors, probably the epidemic in France of 1545, "*trousse-galant*," came more near to it. The earliest distinct account of cholera was that given by Bontius, a Dutch physician of Batavia, 1629. Willis (1684), Morton (1692), and others, described epidemic fluxes and "dysenteries" in England in such terms as strongly to remind us of cholera; and so did Degner of Nymwegen, in the Netherlands (1736), and Morgagni in Italy, in 1733. Some British physicians (Greenhow, Aitken) now believe that cholera may have repeatedly visited England. It appears to me more probable, however, that this opinion is due to an overestimate of the resemblance between the autumnal cholera morbus of Great Britain (like our own) and the pestilential disease.

Certainly cholera must have existed in India for an indefinite time. From 1781-2 dates its extended

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\* In this sketch I am chiefly indebted to Dr. A. Brigham's Treatise on Cholera, Dr. E. H. Greenhow's and Dr. Gavin Milroy's papers in the Brit. and For. Medico-Chirurg. Review (April, 1856, and October, 1865), and Boudin's *Traité de Géographie et de Statistique Médicales*, tome ii.



prevalence, in a most destructive form; at Calcutta, in Madras, on the Coromandel coast, and in Ceylon.

In August, 1817, Jessore was the birth-place of the first great migratory epidemic. Shortly after, in Calcutta, 36,000 were attacked in three months. At many military stations, it was very severe. Roads were covered with dead and dying, unable to reach their homes. In November, the grand army of the Marquis of Hastings was devastated by it. Of 90,000 men, in twelve days 9000 had died. On marching the army across a river to dry and elevated ground, the commander was relieved of this otherwise invincible enemy.

In 1818, the Birman empire was invaded by cholera; and there and elsewhere in Asia, its ravages were fearful. In 1819, 150,000 died of it in the Presidency of Bombay. It also reached Mauritius, 20° S. latitude, three thousand miles from any place before visited by it. The Island of Bourbon was visited in 1820; as well as the Philippine Islands. In 1821, Borneo and Java were affected; and a large Persian army was repulsed by it from before Bagdad, without a battle. In 1822 its limits were much narrowed, and its destructiveness abated.

India almost escaped in 1823, but China was ravaged by it; and it extended northwestward,



in that year, to Orenbourg, on the Ural, near the borders of Europe and Asia. In 1826 it passed the great wall of China in its northward progress; but almost left Western Asia. It reappeared in Persia in 1829.

Orenbourg was revisited in that year, and the epidemic there lasted from August to near the end of February. This city had a population at that time of 11,000, of whom 6000 were soldiers. Those first affected had no communication whatever with any infected place.

1831 saw the cholera in the north of Europe, as far as Archangel, near the Arctic Ocean, more than  $64^{\circ}$  N. latitude. It reached Warsaw in April, during an insurrection, and was very fatal. Hungary suffered from May to September; losing 100,000 of its population. In June, St. Petersburg, and in September, Moscow, were reached by the pestilence. Berlin had it also for three months and a half, beginning in August. Mecca was attacked during the visitation of throngs of pilgrims, in May; of 50,000, as many as 20,000 are said to have perished. In this year, while Hungary was infected, the Austrians surrounded Vienna by a double *cordon militaire*; but in vain. The disease began there in August and continued for three months. The southern provinces of Austria and the Rhineland were exempt. Con-



stantinople was affected by it, but not with very great severity. The Turkish government, that year, maintained no quarantine. Cairo suffered dreadfully in 1830-31; and so did Smyrna.

Attacking Hamburg on the 11th of October, 1831, it was officially announced at Sunderland, England, October 26th. It had occurred in several cases in England months before. Three or four weeks later it appeared at Newcastle; and in December, at Haddington, a Scottish town on the Tyne.

Edinburgh and Glasgow first had cholera in January, 1832; London in February; Dublin and Paris in March. London then suffered but moderately; Paris terribly — especially in April and May; 20,000 deaths.

On the 8th of June, it first invaded our continent, at Quebec; and within a week, at Montreal. In the same month it was in New York and Albany. Philadelphia had its first cases in July. Between the 1st of July and the 18th of August, New York had reported 5337 cases, with 2068 deaths. That city lost 3513 in all.\* From the 27th of July to August 18th, Philadelphia had 1610 cases, with 615 deaths. Boston and Baltimore were moderately affected in August.

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\* Dr. A. Clark, Lect. on Cholera. In 1834, New York lost 971; in 1849, 5071; in 1854, 2509.



Detroit, Buffalo, Elizabeth City in North Carolina, Wilmington and Newcastle, Delaware, Norfolk and Portsmouth, Virginia, and New Orleans were the principal of more than fifty towns in the United States reached by cholera in 1832. It had entered twelve different States before September.

Havana and Mexico were attacked in the spring and summer of 1833. The *City* of Mexico, notwithstanding its great elevation above the sea, did not escape.

Portugal was also first visited in that year; Spain but slightly until 1834. Northern Italy was affected in the autumn of the same year. In 1835, Alexandria and Malta; in 1836, Rome, Naples, Egypt, and Central America especially suffered. North Germany, South France, Rome, Naples, Sicily, Malta, Egypt, and Syria, in 1837. After that, cholera disappeared from Europe and America for nearly ten years. It still existed, in variable violence and extent, in India.

In 1847, it ravaged a Russian army west of the Caucasus; and in September returned to Moscow. In 1848, Turkey, Russia, Austria, Prussia, Belgium, Holland, Great Britain, and France (though not Paris) were successively attacked. Then the cholera showed its power to traverse the sea without human aid or agency, by attacking two emigrant ships, a thousand miles apart, one sixteen and the other twenty-seven days out from Havre,



*when no cholera was prevailing at that port.\** The *cholera-cloud* itself also reached New Orleans about the same time, and progressed up the valley of the Mississippi. New York was not affected by the visit of the infected ship; the disease not occurring again there until May, 1849.

Paris was reached by it in February of that year, but suffered the worst in June. Lyons now had it for the first time. Tunis and Algiers were visited toward the end of the year.

In January, 1849, after Memphis, St. Louis, Missouri, was attacked. Chicago, Buffalo, and other towns on the lakes, in May. New York and Philadelphia in the same month. Baltimore had this year only a local epidemic, in July, in the Almshouse; the restriction of which to one side of the building was very remarkable. As in 1832, the mortality in Philadelphia was much less for the population than in New York: 1022 deaths occurred in our city; New York had a mortality 450 per cent. greater.† Canada was reached this time from the westward.

In 1848-9, the number of deaths from cholera in England and Wales was over fifty-four thousand (54,398); in 1832-3, nearly thirty-one thousand

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\* Report on Cholera in the United States, by Dr. James Wynne; and Dr. Gavin Milroy, Brit. and For. Medico-Chirurg. Review, Oct. 1865, p. 444.

† Dr. J. H. Griscom, Medical Record, March 15th, 1866, p. 35.



(30,924). In London,\* probably owing to greater attention to sanitary means, the mortality was two-fifths less the second time than the first. Some parts of southern Rhineland were visited in 1849; especially the filthy City of Cologne.

Cholera lingered in various places almost sporadically, in Europe and America, from 1850 to 1854. Canada and the far West (Indiana also had cases every year) suffered the most, in this way, on our continent. In the West, emigrants' camps and military stations seemed especially to furnish its required local conditions.

In 1853, Persia had it severely; also some parts of Northern, Central, and Southern Europe (Copenhagen, Hamburg, Berlin, Piedmont, Lyons, Paris, and Southern Portugal). Before the end of the year it was again in New York, New Orleans, and the West Indies. Mexico had been visited in the spring, and through the summer.

1854 was still more a cholera year in Europe and in this country. Scarcely any European state or kingdom was exempt. The French, English, and Russian troops suffered from it much in the Crimea. Greece, Italy, Germany, France, Spain, Portugal, in short, all Europe was traversed by it: 150,000 died of it in France alone; in England

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\* London had 13,098 deaths from cholera in 1849; in 1854, about 10,000.



and Wales about 20,000. Newfoundland, on our side of the ocean, was reached for the first time in 1854. This was the year of the epidemic at Columbia, Lancaster County, in this State; so remarkable for the absence of some of the usual promotive conditions of cholera. Our great cities, however, did not suffer nearly so much as in 1849.

In 1855, the disease was widely spread in Europe, though not very malignant except near the seat of war, before Sebastopol. Egypt and Palestine had it also. In Switzerland, which had been slightly touched before, Basle, Geneva, Zurich, and other places now suffered by it. The next year, 1856, still did not witness its withdrawal from Europe.

Since that period, until 1865, I have no means at hand for tracing the movements of epidemic cholera. Dr. Gavin Milroy says that the countries hitherto exempted have been as follows: Australia, New Zealand, and other islands in the Pacific; the Cape of Good Hope and adjoining settlements; the coast of Africa from the Cape as far northward as the Gambia, and including the islands of St. Helena and Ascension; the Azores, Bermuda, Iceland, Faroe islands, and also the Orkney and Shetland; the southern half of the eastern coast of South America, from the Rio Plata inclusive, Cape Horn, and the whole of the western coast of that continent, from the Cape and along the shores of Chili and Peru to Panama.



In last year, every one was familiar with the accounts of cholera in Arabia and Egypt in the spring, at Constantinople in July,\* and afterward in several parts of Europe, extending, though with but moderate violence, as far as England. While its vast migrations seem to be as capricious or incalculable as the flight of locusts, two local causes contributed at least to its *severity* in Mecca and on the Nile. These were the crowds of religious pilgrims at the former place, in the spring, and, in Egypt, the insalubrious circumstances attending the operations at the new Suez Canal. In both, "crowd-poison" was intensified to the greatest degree; so that the pest-cause might well find there strength for the renewal of its flight onward to the northwest. In Paris, in 1865, 6383 deaths occurred during the late visitation.

I take from Dr. Brigham's treatise (published in 1832) the following table, of the deaths from cholera in 1832, and their proportion to population :

	Population.	Deaths.	Equal to
Moscow,	350,000	4690	1 in 74
Petersburg,	360,000	4757	1    74
Vienna,	300,000	11,896	1    159
Berlin,	340,000	1401	1    242
Hamburg,	100,000	446	1    224
London,	1,500,000	1223	1    1228

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\* The first case occurred in that city on the 28th of June.



	Population.	Deaths.	Equal to	
Edinburgh,	150,000	72	1	in 2033
Glasgow,	180,000	395	1	455
Hungary,	8,750,000	188,000	1	46
Paris,	800,000	20,000	1	40
Montreal,	25,000	1250	1	20
Quebec,	22,000	1790	1	12
New York,	200,000	2000	1	100
Albany,	24,000	311	1	77

Supposing the population of Philadelphia to have been at that time 150,000, this, with a little over 600 deaths, would give a proportion for our city of 1 in 250 of the inhabitants. In 1849 the ratio was considerably less.\*

It is an important fact in the history of cholera, that before, during, and after the epidemic has visited a place, many cases, greatly exceeding in number those of typical cholera, occur, of diarrhœa, sometimes also with vomiting, not violent, yielding easily to treatment. To these the name of *cholerine* is often given.†

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\* Moreau de Jonnes estimates the number *attacked* as, in France, 1 in 300 of the population; Russia, 1 in 20; Austria, 1 in 30; Prussia, 1 in 100; Poland, 1 in 32; Belgium, 1 in 120; Great Britain and Ireland, 1 in 131; Holland, 1 in 144; Germany, 1 in 700.

† The coincidence or anticipation of cholera by epidemic *influenza* and the potato blight, has been several times noticed. But there is, clearly, no uniformity in any such association.



## NATURE OF CHOLERA.

Without discussing opinions at length, it may be asserted that cholera is not at all, like our ordinary cholera morbus, a disorder simply of the stomach and bowels. Being clearly an acute *systemic* affection, changes in the blood are *proved* to occur in it, and may well be believed to be primary; that is, that the morbid cause acts through the blood. But that is not all.

Cullen placed cholera, in his nosology, in the class *neuroses*, order *spasmi*. Many medical observers (Binaghi, Loder, Orton, Delpech, Lizars, Coste, Favell, C. W. Bell, Greenhow, G. Johnson, etc.) consider its principal effects to be referable to disturbed innervation, involving chiefly the ganglionic centres of organic life. Dr. Charles D. Meigs, years ago, graphically called the attack the "cholera squeeze." Velpeau, of Paris, lately repeats this, "*le mal vous tortille*." There, I think, is the pathology of cholera, in one word. As Dr. C. W. Bell says, it is not an adynamic, but a dynamic, or sthenic, collapse.

The heart, its left side at least, is, after death, contracted. The pulmonary artery and its branches are narrowed, making the lungs pale and anæmic. The gall-bladder is full of bile, but the duct is spasmodically closed, and detains it there. The



urinary bladder is shrunk to half its size or less. The blood-vessels of the whole alimentary canal press rigidly upon their contained fluid, and force its serum out into the stomach and bowels; whence it is, by spasmodic ejections, thrown out. The very skin is, by its involuntary muscular fibres, as well as by vascular constriction everywhere, drawn tightly and closely upon the body. The voluntary muscles suffer with cramps. All is cramp, cramp, within and without. The brain is almost in anæsthesia during the collapse—no delirium, but apathy—as from cerebral anæmia. The blood, so compressed, grows thick as tar—it scarcely flows, is not aerated, and cyanosis follows;—it is detained in the capillary and venous networks of the interior organs, in which congestion is found after death.

Cholera is, then, I say, a poison-spasm; a ganglionic tetanus.

### CAUSATION.

*Begin*  
Here we enter, unavoidably, the region of speculation. Not, however, without facts to give us hope and promise. By exclusion, we can first see what the cause of cholera is not.

1. Is it heat, moisture, electricity, ozone, or any modification or combination of the pervading physical forces of nature? Surely not. Those



*From April no. Med. News*

Outbreak of Puerperal Fever.—Our attention has been directed to a severe outbreak of puerperal fever in the neighbourhood of Wandsworth-road and Battersea-park. We have personally investigated the circumstances of the death of four of the cases, and learned particulars of several others. The cases seem to have occurred in the practice of one midwife, and in the four instances above alluded to she was distinctly the source of the infection. The duty of the medical men in the neighbourhood is obvious: they should refuse to sign any certificate of death in any case of puerperal fever occurring in the practice of this midwife, and thus compel the coroner to hold an inquest. This has been



*Improved Elastic Tourniquet.*—Dr. DAVID FOULIS, at a recent meeting of the Glasgow Pathological and Clinical Society (*British Med. Journ.*, Feb. 6, 1875), showed an instrument he had devised, which was now made and kept by Hilliard. It supplied a want felt in applying Es-march's elastic band, namely, a simple and efficient means of fastening the band at any point. It consists of two connected metal tubes: one to hold the band, the other to catch it at any degree of tension. To apply it, the band is stretched across the limb, the catch being in the middle; the ends are then passed under and around the limb, and brought up and slipped into the slit of the upper tube,



done as yet in only one case, and at the time of our visit we learned that the coroner had refused to take cognizance of the death. At Coventry, where a similar outbreak has taken place, we learn with satisfaction that a midwife, Elizabeth Ingram, has been committed for trial on a charge of manslaughter by a coroner's jury for communicating puerperal fever to her patients. It appears she had been warned by the coroner on December 1st to abstain from practice, but did not do so. Since then two inquests have been held in fatal cases attended by her. Such examples are sadly wanted, and the coroner of the Wandsworth district will, in our judgment, be neglecting his duty if he does not attempt to prevent this woman continuing to bring death and desolation into the homes of her poor patients, who, ignorant of the fatal poison attached to her, solicit her aid.—*Lancet*, Jan. 16, 1875.



he was enabled to cut down on the kidney; and also that, although he had been unable to find any calculus, the distressing pains had been effectually removed by the operation. This last fact he thought could be explained by supposing that the incision acted as a strong counter-irritant.

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*On Unsuspected Calculi in the Bladder.*  
—Mr. JOHN FOSTER reports (*The Lancet*, October 10, 1874) the case of a gentleman, aged seventy-six, who had a narrow stricture at the orifice of the urethra. He had considerable frequency in making water, but had suffered no pain, and never passed any blood. The stricture was divided, and a catheter introduced to ascertain if he emptied his bladder. With the urine came a large number of very small calculi, and, by injecting warm water, over a thousand were washed out. They had never caused him any inconvenience.—*London Med. Record*, Dec. 30, 1874.



forces are *cosmic*, not localized in their operation. Observation would hardly be *needed* to show that no state of physical conditions marks the presence of a cholera epidemic; but observation *has* shown it. Sir Henry Holland\* compared the atmospheric conditions of five different places in which cholera was prevailing; there was no correspondence at all. Barton has found a high dew-point during cholera in New Orleans; but it prevails often in India where the air is dry. Dr. Moffatt lately has asserted that the equatorial current of moist, ozoniferous air is fatal to the prevalence of cholera. Bérigny, in 1856, thought a deficiency of ozone to coincide with cholera; but Bérigny has, <sup>since</sup> just now, asked and obtained the appointment of a learned commission of the French Academy, to ascertain definitely whether there *is* such a thing as ozone! Dr. Hammond, in Kansas, found no ozonometric reaction during cholera; but Prof. Ellet, of New York, proved, in 1849, that there was no constant relation between the two.† Schultze, Voltolini, and others assert the same conclusion. As to climate, the disease has prevailed from Archangel to the Isle of Bourbon, and from China to Mexico. No *telluric* causation, therefore, can suffice for it.

*Elevation* has no fixed relation to its occurrence.

\* Medical Notes, Philadelphia ed., p. 349.

† Hammond on Hygiene, pp. 164-165.

atmospheric  
 \* \* \*  
 H. H. Holland has (1873)  
 shown clearly that there is such.

"Holland's blue mist."



In London, Dr. Farr found the mortality to be directly in proportion to the lowness of site. But cholera has prevailed 9000 feet above the level of the sea, at Bogota, in 1849; 7000 feet, at Emmeneh in Persia, in 1853;\* more than once in the City of Mexico, at an elevation of 7990 feet; and in a citadel built upon an isolated rock (Jaragurth, in Bengal),† 1000 feet above the plain. We must explain the influence of lowness of site, as Dr. Baly pointed out, merely as *one* of the circumstances which *modify* the prevalence of cholera; not as accounting for it.

Coming and going, then, across the earth, from time to time, its cause cannot be *conditional* merely. Nor, if it were so, could it happen that, among multitudes of persons, in the same spot, "one should be taken and the others left."

2. If, then, not *dynamic* or cosmic, this cause, though occult, must be *material*. Nor could a *mineral solid*, or *liquid*, possibly so traverse the earth undetected *per se*. It must be, if inorganic, volatile, to cross the ocean alone. That it can do so, has been proved in a number of instances. Those of the emigrant ships, New York and Swanton, in 1848, from Havre, have been ~~already~~ *often* alluded to. In 1854, I had direct cognizance of

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\* Gavin Milroy, op. cit., p. 449.

† Brigham, op. cit., p. 33.



such occurrences, in the packet-ships Tonawanda and Tuscarora, Cope's line, between this city and Liverpool. The first was attacked when two weeks at sea, there being no cholera at Liverpool when she started. After a number of days' prevalence, this vessel neared a large iceberg, which reduced the temperature of the air  $30^{\circ}$ . The day before the iceberg was met, the largest number of cases occurred; after that, no new one at all. The epidemic was frozen out. In April, 1866, other instances occurred, to which allusion will be made hereafter.

Since, then, I say, the cholera cause can travel far over sea, or land, it must be volatile, or extremely mobile. Is it a *gas*? Chemists have not found such; but that does not quite disprove it. But the *diffusion* of all gases through space, aided by the winds, prevents the local accumulation of gases everywhere, unless constantly emanating from a terrestrial source. Thus the mephitic poison of the celebrated deadly valley of Java, and the carbonic acid stratum of the Cave of Dogs in Italy, are accounted for. No poisonous gas, according to all physical experience, could possibly maintain concentration enough to destroy human life, during weeks and months together, at one place, and then leave it to rest upon another—unless a *source of emanation* were as migratory. As no such mobile *source* is known, the gaseous hypothesis must explode of itself.



3. What *possibilities*, then, are left? I have observed that, *if inorganic*, the "cause" in question must be a gas; but it has been shown, just now, that *no* such gas can have existence; therefore the cause *must be organic* in nature. I see no escape from this dilemma, however wanting we are in physical demonstration of the conclusion it brings on. The *source*, at least, of the cholera-cause *must be organic*.

4. What *organic* sources are *possible* for it? Conceivable theories are—I. That it is a contagious effluvium from the bodies of those sick with the disease. II. That it is generated by a peculiar chemical change in the excreta, either of the sick or the well. III. That it is a cryptogamous vegetation, a microphyte, requiring certain peculiar and only occasional conditions for its existence. IV. That it is minutely animalcular in nature, existing, migrating, and propagating itself only where local circumstances permit.

I. Is cholera contagious? The word is variously defined. I follow La Roche and others in regarding a disease as contagious, only, when its cause is a material produced by a morbid process in the bodies of the sick, and generating the same disease in those whom it reaches, either by contact or at a short distance through the air. In this sense it is proper to assert most emphatically that cholera has never been shown to be contagi-



In Oct. 1866, in Phila.,  
after there had been from 6 to  
16 cases, about, at the most,  
in a day, since August, -  
suddenly the number of cases ran  
up to 54, with 23 deaths - &  
the next day 57 - & then down  
almost at once to 8 cases. And  
while before this increase it had  
been strictly confined to certain  
"unsanitary" quarters, - on  
those days - in that week (in  
which were 127 deaths from  
Cholera - & over \$50 for all do  
against less than 300 average  
for that week in our year) only  
one of the 26 wards of the City  
was without cases. Deaths from  
it were scattered all over.



The <sup>Source of Epidemics</sup> Theory of Canstatt, Bruce,  
Parkes and many others is, that Cholera  
is only extended by means of the  
discharges from the bowels of those  
ill with it, conveying the specific  
contagium to persons in health  
by means of drinking water;  
possibly, in rare instances, through  
the air, to a very short distance.  
The promotive influence of fecal  
contamination of water is, necessarily,  
admitted by all, as a fact  
proven.

The theory of exclusive fecal trans-  
-mission cannot possibly be true.

Because, - 1. Cholera migrates across  
the oceans, independently of ships.

2. Its advent in a place ~~is~~  
~~its extension of~~ is general-  
ly marked by many persons  
being attacked at once, altogether  
apart from each other.

3. Its movements have no con-  
-stant relation to lines of be-  
-nign intercourse; depending more  
on local conditions be readily.  
4. Special diminution of cholera still  
fails: requiring special measures must be used.



ous in a single instance; while the always difficult *negative* proof is abundant. Every *apparent* case of contagion (and such are *extremely* rare) is susceptible of a different explanation.

*Against* contagion we have, especially, the following points:

A. Cholera is often preceded in a place by a considerable increase in the amount of *diarrhoea*; showing the presence of a general atmospheric cause, the intensification or accumulation of which brings on the epidemic.

B. It subsides in a locality, after days, weeks, or months, with no constant reference to the number of persons susceptible to it, but *obviously* in relation to local sanitary conditions.

C. It attacks, simultaneously, places as far apart as London and Newcastle; and often hundreds the same day in a large city. Thus seven thousand perished from it in Paris in eighteen days, in 1832. In the Massachusetts State prison, four within an hour, and two hundred and five within forty-eight hours, were attacked.

D. Cholera is sometimes limited to a part of a town (Oxford, England, according to Drs. Baly and Gull) or even a part of a house; as at Baltimore in the Almshouse, in 1849. Dr. Buckler then reported its existence, when there was no cholera elsewhere in the city, in *one-half* of the Almshouse building, in which *seventeen* fatal cases

*See m. J. note*



occurred; none whatever in the other half, similarly occupied. The *difference* was, that under the walls of the affected side of the house was "a large and foul overflowing cess-pool, whose contents mingled with the washings of the dead-house, etc." In several instances, also, it has been confined to a part of a ship.\*

*E.* An army or other encampment may be affected terribly while in one locality (as with the Marquis of Hastings in India, mentioned before), and then, by a short march, escape from it altogether. Such occurrences are frequent and familiar in India. (See *S. Clark*, Hygiene of the Army in India.)

*F.* In Hindostan, where cholera is annually present, the facts are of such a nature that the idea of contagion is scarcely entertained by any medical men or others. Dr. James Johnson wrote, many years ago, that "in India, the contagiousness of cholera is denied by ninety-nine out of every hundred medical men." And in a work published in 1864, on the Hygiene of the Army in India (Stewart Clark, M.R.C.S., Inspector-General of Prisons, etc.), I find statements corroborative of this. For example, the following:

"After the Hurdwar and other large fairs in India, cholera almost always appears in the vil-

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\* *E.g.* steamers England and Virginia, April, 1866, etc.

† Dr. Bryden - after living many years in India, declares that of the medical men having charge of the great Cholera Hospitals in Calcutta for 50 years, - not one has believed in the contagion of the disease. -



lages on the lines of roads leading from them ; but the cases are generally confined to people who have been at these fairs. For instance, at Deyrah Doon, about forty miles from Hurdwar, there are often two annual visitations of cholera : viz., one in April or May, confined to individuals returning from the Hurdwar fair ; and one later in the season, of the usual epidemic type, among the general inhabitants of the town.”\*

In the words of Dr. A. Flint,† “compare its course as an epidemic, in this respect, with typhus, small-pox, or scarlet fever !”

G. Nurses and others brought into contact with cholera patients, even in hospitals, are not more liable than others to the disease. An official report to the French government stated that in 1831, of over two thousand persons employed in nursing in *hospices* or hospitals, during an epidemic of cholera (which produced in all eighteen thousand deaths), only one hundred and sixty-four were attacked. At St. Petersburg, 1 nurse in 58 had the cholera ; in Moscow, of 253 persons connected with one hospital, 4 only were affected by it. In the latter city, also,‡ 587 patients affected with cholera were admitted into a hospital with 860 patients, laboring under other diseases, yet *not a*

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\* Op. cit., p. 13, note.      † Practice of Medicine, p. 425.

‡ Brigham, op. cit., p. 324.



*single one* of the latter was attacked by cholera. Dr. Alison (himself half a contagionist) recorded the fact\* that, in Edinburgh, in 1832 and in 1848-9, the dissecting-rooms were supplied almost exclusively by cholera subjects; and in neither year was there a single case of the disease among the numerous students attending those rooms. Post-mortem examinations have been made freely, by physicians everywhere, during cholera, without any evidence of danger therefrom.

*H.* No effort to produce cholera by direct contact or otherwise, experimentally, has ever succeeded. Dr. Foy and ten others, at Warsaw,† inoculated themselves with the blood of cholera patients, tasted their dejections, and inhaled their breaths, without receiving the disease. So did the surgeons and medical students at Moscow and Dantzic in 1832; and similar experiments with like results and conclusions were tried by Lizars, Coste, Schmidt, Meyer, Marshall, and others. An ~~late~~ article in the Richmond Medical Journal, by Dr. Houston, mentions that a man in Wheeling, during a cholera epidemic, lay all night in the clothes of another who had just died of the disease; but was unhurt by it.

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\* Brit. and For. Medico-Chirurg. Review, Jan. 1854, p. 22.

† Gazette Médicale, 1831.



① steerage ①  
In Sept. 1866, a woman  
passenger on the Wyoming  
Copes' packet, was taken  
with cholera immediately  
after coming on board: before  
the pilot left. She died.  
No other case during  
the voyage. N.B.

F. R. Cope told me of  
this Oct. 2<sup>nd</sup> 1866.  
—over—



In Insane Department of  
Philbrick House, Aug. 5<sup>th</sup>  
'66, a person who had been  
for years in the House, and  
had been in no way exposed  
to receive the disease by contact  
as Dr. Butler says, was taken with  
cholera, & died next day. 42  
cases all then occurred in  
10 days, with 31 deaths.

Med. Surg. Reporter,  
Sept 29<sup>th</sup> 1866.



ANCE.  
*Cholera Hospitals.*—The following is the substance of a report drawn up by the Council of the Epidemiological Society, and is of unusual interest at the present time.

I. There appears to be a general concurrence of opinion, expressed or implied, that under certain circumstances and conditions cholera is liable to be communicated from person to person; the liability being usually in proportion to the crowding of many persons together, the defective ventilation of apartments, and the neglect of thorough cleanliness in respect of person or abode.

In addition to the possible risk of the extension of the disease from this source, the alarming character of the symptoms, and the necessity for unremitting attendance upon the sufferers, are calculated to produce terror in the minds of spectators, and thus strongly predispose them to be attacked during an epidemic season.

For these reasons the opinion is very generally held that it is unadvisable that cholera patients should be admitted into wards which are occupied by other sick inmates.

The experience, however, of some of the metropolitan hospitals in past epidemics shows that, due attention being paid to sanitary arrangements, cholera patients may be received, in limited numbers, into the general wards without injurious results either in the other sick or to the ordinary attendants.

No instances have been referred to, in the evidence before the Council, in the opposite direction—viz., of the disease having spread to the other inmates of a ward in a well-regulated hospital.

1866-7  
7-991



these ; (a) Ample patient ,  
less than 1500 or 2000 cubic feet. (b) Thorough ventilation of the wards at all times, both night and day. (c) Immediate disinfection and removal of the excreta, soiled linen, &c. (d) A separate staff of nurses.

III. The reply to the third query depends much on the opinion formed in respect of the two former questions. If cholera patients are not admissible into general hospitals or infirmaries under any conditions, it is obvious that some extemporized and special arrangements must be provided for the reception of the destitute when attacked.

But even when they are admitted, there are various circumstances in which it will be advisable or necessary that special hospitals should be provided, *e. g.* (a) When general hospitals or infirmaries are at a distance from the seat of the actual or apprehended outbreak. (b) When there is a want of accommodation, with due regard to the ordinary patients, or when the accommodation is unsuitable or objectionable.

In selecting the site of special hospitals, the following points require to be attended to : (a) Nearness, if possible, to the chief seat or seats of the outbreak. It is important that cholera patients should not have to be carried far. There is, moreover, great risk in moving patients in, or verging to, the state of collapse. (b) Airiness, and freedom from intrinsic or contiguous sources of atmospheric pollution. (c) A dry soil and raised situations are, of course, to be always preferred to a low and damp one.

Amid the crowded districts of a large town, it appears preferable that several small and suitable hospitals, or "houses of recovery," should, if possible, be estab-



At Hospital Lariboisière,  
separation of cholera cases absolute  
new cases of chol. among other patients  
more than 20 in 100.

H. St Antoine, separation  
very incomplete, m.c. but 2 in  
100.







Dr. Lauer Lindsay\* made elaborate experimentation with dogs; and thought he had succeeded in giving them cholera. But it does not appear so to me, in reading his account. The dogs were exposed in no case less than seven days to the combined effects of confinement, swallowing and breathing the matters of evacuation and perspiration of cholera patients. Then the symptoms ought not at all to be regarded as specific, as the discharges were "decidedly biliary, green, and greenish feculent matter," and "emitting an intolerable stench." Dog No. 1 is also stated to have become *somewhat lively and greatly better*, after having eaten a quantity of the flesh, fat, and blood of dog No 2, which died on the previous day. The expression of Mr. Marshall, another investigator, is clearly correct—that this evidence is still "short of proof" of any contagion belonging to cholera.

I cannot but anticipate that a similar conclusion would follow a scrutiny of the experiments of like character more recently performed by Thiersch in Munich, and Robin at Paris.† They have made dogs *sick* by injecting the excreta of cholera patients into the trachea and veins. No wonder!

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\* Edinburgh Medical and Surgical Journal, April and October, 1854.

† London Lancet, Jan. 13th, 1866.



But, against all this we have the familiar fact that dogs *do not get* the cholera at all by exposure to the companionship of patients, nor by presence during its epidemic prevalence. Every experiment of the kind is simply toxicological, not clinical or *à propos* in any sense.

The influence of *drinking water*, the occasional occurrence of new cases in hospitals to which cholera patients are admitted,\* and *all other seeming* instances of contagious transmission, are, as will be shown hereafter, clearly susceptible of a *different explanation*, which embraces *all* the facts.

I. Cholera does not follow regularly, nor depend for its migrations upon, human intercourse. Instances proving this abound in the whole history of it; a few must suffice us here.

Whatever the amount of travel, cholera moves with extreme *slowness*† against the wind. This is especially observable in India; where, as Orton has recorded, it takes sometimes three months to pass over the distance of a ten days' voyage, notwithstanding constant communication.

When the epidemic first reached England, in 1831, after having been in Berlin and Hamburg, it appeared in Sunderland October 26th. *It did*

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\* Brit. Med. Journal, Dec. 9th, 1865.

† Parkes; *vide* Aitken's Practice of Med., vol. i. p. 659.



*not reach London* until February, 1832; notwithstanding constant communication between that city and the infected district.\*

One of the Western Islands, beyond the coast of Scotland, on the other hand, was attacked by the disease, although the intercourse between it and the main land was so rare, that the clergyman of the island continued to pray every week for King William the Fourth, for eighteen months after Queen Victoria had ascended the throne.†

In 1832 and 1848, the town of Annan, nearly equidistant from Carlisle and Dumfries, and right upon the main line of traffic between those towns, escaped cholera altogether, while it prevailed both at Dumfries and Carlisle.‡

I repeat, that these are only instances of a large class of facts, which show a *capriciousness* in the career of cholera epidemics, altogether adverse to the supposition that it is either contagious or in any way dependent for transmission upon human intercourse.

But the advocates of the view just now most prevalent, urge that on all occasions cholera has crossed the ocean only in ships. Each by each of

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\* G. Milroy, Brit. and For. Medico-Chirurg. Review, Oct. 1865, p. 438.

† Aitken, op. cit., p. 650.

‡ Edinburgh Monthly Journal of Med. Sci., April, 1854.



the asserted instances of this has been or could be met and shown to be quite unproven. A *single* case of such disproof would establish for us the important proposition, that cholera certainly does not *depend* for its migrations upon human agencies or contingencies. <sup>★</sup>

P. 12 What do we say of the *New York* and *Swanton*, vessels, in 1848? (They have been already alluded to on a previous page.) I say, *first*, that there was no cholera at Havre when they started, nor for some time before; Dr. James Wynne\* and Dr. Gavin Milroy† being my authorities for the statement.

Secondly, I regard it as a *decisive* fact, that in all the accounts of the voyage of these vessels referred to, one is said to have been *sixteen* and the other *twenty-seven days out* at sea before any cholera occurred on board.

Now what, according to the strictest contagionists, as well as those who believe in the theory of *excretory fermentation* (Pettenkofer), is the time of *incubation* of the cholera poison? Budd,‡ Niemeyer, and Greifswald make it from six hours to three days; Kiërulf,§ of Bergen, from one to

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\* Report on Cholera in the United States.

† Brit. and For. Medico-Chirurg. Review, Oct. 1865.

‡ Association Journal, 1854; Memoranda on Asiatic Cholera, 1865.

§ Aitken, Practice of Medicine, vol. ii. p. 657.

★ What vessel is charged with carrying cholera to New Orleans in 1873? There ~~was then~~ <sup>(June 12)</sup> ~~no~~ cholera at any European sea-port to send it from.



four days; Rilliet, Madin, Weissbrod, Hielman, and others, twelve hours to eight days.

How absurd, therefore, to endeavor to construe the case of the *Swanton* as one in which the cholera was *transported* from Havre to New Orleans by that ship! The arrival of the *New York* at the port of that name was not followed by the infection of that city. I would say, that the arrival of the epidemic at New Orleans simply *coincided*, pretty nearly, with that of the *Swanton*; which had been *overtaken by it* on its way. While these pages <sup>were</sup> ~~are~~ being written (April, 1866) two analogous cases are attracting attention; those of the steamers *England* and *Virginia*, from Liverpool; attacked by cholera when five and eight days out.\* *Estrazulas, Paraguay, 1872.*

J. But something must be said of the authenticated instances where transportation by persons seems to have occurred. With a good deal of research, I have been able to collect together only the following, as allowable in evidence.

Certain cases mentioned by Dr. Jameson, in the Bengal Report, in 1824.

Eight persons taking cholera at Toulon, shortly

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\* Some conjecture that German emigrants must have brought the disease to the *England* and *Virginia*; but, if so, why did they not likewise infect Liverpool?

Dr. Peters imagined a course of transmission  
for it; but his account was emphatically  
denied by 2 or more N.O. physicians.

⊕  
The caprice of migration of the summer epidemic of 1873 in the  
middle western States was remarkable - demonstrable with "current" theory.



after the arrival there of the frigate *Melpomene*, from Lisbon, with cholera on board, in 1833.\* No other cholera cases occurred at Toulon for two years.

A woman attacked at Edinburgh, in 1832, when no cholera prevailed there, after nursing her son, who got the disease at Musselburg and came home sick with it.†

Some instances mentioned by Dr. Simpson (Edin. Med. and Surg. Journal, April, 1838, and Edin. Monthly Med. Journal, 1849), quoted with only partial details by Dr. Alison (Brit. and For. Medico-Chirurg. Review, Jan. 1854).

Three women took cholera after washing the clothes of some sailors who had died of cholera, at Banff, Moray Firth, Scotland, 1832.‡

Two men died of cholera, in 1849, at Campbelltown, Scotland, after the arrival of a woman from Glasgow, with some blankets which had been used by her sister-in-law who died of cholera. The disease then existed nowhere else within fifty miles (Dr. Robertson, Edin. Monthly Journal, August, 1849).

Several instances are given by Dr. Berg, in his

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\* London Medical Times, N. S., vol. iii. p. 515.

† Ten days afterward cholera became epidemic in Edinburgh.

‡ Alison, loc. citat.



Treatise on the Cholera in Sweden, in 1850; of which I have not details.

One case is narrated by Dr. S. H. Dickson, in Charleston, 1832 (Am. Journal of Med. Sciences, vol. xiii. p. 309).

The outbreak of cholera at Arbroath, in Scotland, in 1853, described by Dr. T. Traill (Aitken, op. citat, p. 656). Some instances in the Norwegian Reports of 1850-53. Others in the Report of the College of Physicians of London, 1854. A few cited from a Bengal Report, 1853, by Dr. Aitken.\*

A few cases mentioned by Boudin in his "Traité de Géographie et de Statistique Médicales" (tome ii. p. 374), viz.:

Three persons in the commune of Masles, in France, affected, in 1849, subsequently to the arrival of a person who visited Paris while cholera was prevailing there, returned to Masles, became ill, and died of cholera.

One person, in the same year, in the commune of Conde, attacked after handling the clothes of a woman who had died of cholera; there being no other cases at Conde at the time.

Three individuals, in the same year, affected at Aubées, after the arrival there of a person from

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\* Practice, p. 656.



Courville, where cholera prevailed, that person becoming ill and dying of cholera after his arrival.

According to M. Bucquoy,\* two wet-nurses, going from Paris to Péronne, and falling ill there with cholera (1865), communicated the disease to eight other persons; some of whom died.

In Dr. Burrall's recent work on Cholera, received since the above was written, several other examples of an analogous kind are given.

All of these, together, would count, I suppose, since 1817, possibly fifty or a hundred individuals, who might be acknowledged to have taken cholera, in immediate sequence upon exposure to contact with the persons or clothing of cholera patients, in localities not at the time under the epidemic influence.

Granted, then, that such was the case. They are, clearly, *exceptional* instances. If cholera was in any proper sense contagious, *could* the *instantiæ crucis* possibly be so few and hard to find or prove? No! But how do we account for these? On the principle of *fomites*; of occasional, very rare, carrying of the cause of cholera, the "germs" of it, in clothing, merchandise, or by the person of a human being; as one might carry-skipper on a

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\* Discussions of Parisian Hospital Med. Society; Philadelphia Med. News and Library, Feb. 1866, p. 22.

[End of 31<sup>st</sup> Lecture, 1872.]



piece of cheese in his pocket, or a paper of flower-seeds in his carpet-bag.

*Practically*, what is the difference between this and contagion? Much, indeed! When the cause of the disease is a somatic (*bodily*) contagion, no prevention of it is available, except the total and remote *avoidance* of those *persons* who have it, and of things which have been in contact with them. When the cause is an *extra-somatic* infection, depending, for its production, multiplication, and transportation, on local and atmospheric conditions, not personal—then those conditions may be met preventively; and the very rare carrying power of *fomites* may be reduced to nullity, by sanitary precautions. Against contagion, we would have only quarantine; a most “lame and impotent” defence. Against infection, we have the amply sufficient measures of sanitary police and management.

Contagion, as a theory, would explain only a minority of the facts concerning cholera, and is not required to explain them. Infection will explain all.

Let me here state briefly the main facts in reference to ~~the~~ three vessels which ~~have reached~~ our shores ~~within a few months~~, having cholera on board. 1866.

The *Atalanta* arrived off New York on the 2d of November last, with emigrants, from Havre.

1865



In the steerage there were a number of cases of cholera during the voyage; *none at all in the cabin.*

The steamer *England* reached Halifax April 8th (~~the present month~~) from Liverpool, with 1202 passengers, chiefly emigrants, Irish and German. When five days out, she was attacked with cholera. The disease did not then exist, and has not since (as shown by a number of arrivals from that port later) existed at Liverpool. It was, on the voyage and at the quarantine, confined entirely to the steerage.\*

The *Virginia* arrived, also from Liverpool, April 18th, at New York quarantine station. She had 1043 passengers, 14 saloon and 1029 steerage, most of the latter being German and Dutch. Leaving Liverpool on the 4th, on the 12th cholera broke out *among the steerage* passengers, in the "orlop," below the deck and beneath the water line: 37 died during the voyage. After reaching quarantine, being detained there, the disease *increased*, but still was exclusively confined to the steerage passengers.

Now, how did these vessels get the cholera?

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\* Eight passengers escaped from the *England*, and one died of cholera at Halifax; without any other cases following there. Dr. Slayter, of Halifax, went on board of the vessel, took the disease, and died of it.



Not at Liverpool, for there was *none there*. Did German emigrants bring it on board? If they *could* have, why, as they stopped at Liverpool, did they not infect that city also? But yesterday (April 30th), a steamer arrived direct from Hamburg, with no tidings at all of cholera in Germany. Dr. E. B. Dalton, Sanitary Superintendent of New York, and Dr. Elisha Harris, a distinguished sanitarian, went officially on board the *Virginia*, and carefully questioned the passengers in regard to their original starting-places. They had none of them knowledge of any epidemic in any place they came from or through. The nearest possible approach to anything whatever of the kind was said to be that, "*during the past winter, the disease had appeared in certain towns in Saxony, near which some of them had resided!*"

Determined, indeed, must any one be to insist upon the *communication* theory, who will account, by a vicinity dating back to "*last winter,*" for an epidemic commencing out at sea, in April, which, yet, in neither of three ships successively so affected (including the *Atalanta* of November), can be or has been communicated *from the steerage to the cabin* of the same vessel! So palpable was the contrast of safety and of infection between the saloon—spacious, clean, and well aired—and the steerage—crowded, close, and unwholesome—that the cabin passengers on one of those vessels pre-

*the previous*



ferred to remain upon it, in their apartments, to being removed elsewhere, in the immediate and insalubrious company of the emigrants among whom the disease had proved so destructive.

These cases appear to me extremely important, as explicable, clearly and consistently, *only* upon the view that the cholera-cause has the power of migration across the sea; a crowded vessel, like a filthy city on land, affording the local conditions for its manifestation, propagation, and extension.

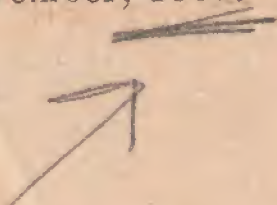
Wishing to give full legitimate effect to all that can be asserted of a different tenor from what I maintain, I quote the following from Dr. Harris, in a ~~recent~~ report:\*

*official*  
“In studying the history of fourteen epidemics of cholera that have occurred within the walls of our New York quarantine establishment, the writer has seen abundant evidence of the infectious agency of the sick and their ‘rice-water’ evacuations.

“Concerning these repeated outbreaks of cholera at quarantine, it should be stated, that while they proved how fatally infectious the cholera poison may become in the midst of crowded hospitals and public institutions, they have utterly failed

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\* Report on Epidemic Cholera by the Council of Hygiene and Public Health of the Citizens' Association of New York, November, 1866.





## IS NEW-YORK AN INEECTED PORT ?

By order of Gen. Grant, Department Commanders of Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana and Texas are required to quarantine, for 15 days, all vessels from ports infected by cholera, and vessels which have had cholera on board during the voyage to be quarantined for the same length of time after the last case of the disease. Gen. Sickles therefore inquires whether New-York, in the opinion of the Board of Health, is an infected port, to enable him to decide concerning what vessels shall be ordered into Quarantine at Charleston. To the letter of Gen. Sickles the Board has sent the following reply, written by Dr. Elisha Harris, to whom the letter was referred by President Schultz:

SIR: In reference to the communications which you have this morning submitted from His Honor Mayor Hoffman and from public authorities in cities of our Atlantic coast, making specific inquiries concerning cholera and the need of guaranties against it from the port of New-York, I would respectfully state:

That the shipping and wharves of New-York and Brooklyn, together with all buildings and districts in the immediate vicinity of the commercial wharves, remain entirely free from cholera.

That scarcely a seaman has yet been attacked with cholera, and that the chief resorts of seamen are comparatively free from the malady.

That the cholera in both our cities is now so limited to certain



French bark Louis and Julia, from St. Domingo  
Bark Eliza Barss, Conyers, of and from Bermuda, 7 days,  
and oil to J. N. Harvey.

Brig Annie (Br.), McCarty, St. Johns, N. B., 6 days, with deals to  
Holyoke & Murray.

Schr. My Rover, Hughes, Charente (France), 42 days, with wine,  
&c., to N. L. McCready & Co. Aug. 12, lat. 36 14, long. 55 30, spoke  
schr. Caldera, of and from New-York for Valparaiso, 7 days out.

Schr. O. C. Austin (of Boston), Willis, Cow Bay 17 days, with coal  
to Snow & Burgess.

Schr. S. S. King, Clendenin, Calais — days, with lumber to Jed.  
Frye & Co.

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### Disaster.

The steamtug Transport burst her boiler when opposite Lombard-  
st. wharf, Philadelphia, Tuesday morning, 21st inst. Engineer and  
boy badly injured.

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### Memoranda.

The quarantine restrictions at Charleston in relation to vessels from  
New-York, published some time since, have been removed. Passen-  
gers and freight now meet no detention.

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### Spoken.

Bark Louis and Julia (Fr.), from St. Domingo for Marseilles, Aug. 7,  
in lat. 29 19, long. 66 19.

Schr. Caldera, of and from New-York for Valparaiso, Aug. 12, in lat.  
36 14, long. 55 30, 7 days out.



NE

tenant districts, and is so closely watched and treated as to render the port and the greater portion of both cities almost as secure from liability to convey the disease to other cities and ports as though it did not exist among us.

These facts warrant the conclusion that no quarantine against cleanly ships from this port need be enforced at any port except to such an extent as may be necessary for thorough medical inspection of every person on shipboard, and of the records and sanitary condition of the ship—a duty which any waterside town owes to its inhabitants as regards vessels from any port in the United States at the present time.

Referring to the question, "Is New-York an infected" port, in the quarantine sense, or in the meaning of Gen. Grant's Order (General Order No. 15), dated March 12, I should unhesitatingly say that New-York is not so infected.

CARBOLIC ACID.

1866

A communication from Messrs. Seely & Evans, offering to furnish the Board of Health with carbolic acid of 50 per cent purity at \$1 50 per gallon, and a refined article of 70 per cent purity at \$2 per gallon, was read and referred to the Sanitary Committee.

WOODRUFF



tribune.



to prove that from the same exclusive cause—viz., the contagion of the cholera evacuations—a world-wide epidemic could be caused. These outbreaks did prove, however, that the stools and besmeared clothing of the sick with cholera can, under certain circumstances, propagate the disease; while, on the other hand, a series of events at quarantine and in the city demonstrated, that, for the production of a wide-spread epidemic, other important causes than the presence of the rice-water stools and vomitings must be present.”

II. Let us now examine, ~~briefly~~, the theories which connect the propagation of cholera exclusively with the *discharges* of those who have the disease. They are, that of the late Dr. Snow, of England, and those of Pettenkofer and Thiersch, of Munich.

Snow's theory was, that a poison is generated by the morbid process of the cholera attack; which poison passes from the bowels of the patient; that this poison is conveyed by the water which absorbs it from the tainted atmosphere about him; and thus, through “continuous molecular change,” it taints destructively the systems of those who drink such water, or the water of streams polluted by sewage or drainage into which cholera excrements pass.

It has already, I consider, been shown—1st, that there are facts which this theory will not account



for; and, 2dly, that all the facts (many as they are) proving the important influence of drinking water over the mortality of cholera, can be explained as well upon another, wider view. X

Pettenkofer's theory is much like Snow's; but he supposes the poison not to pass as such from the bowels of the patient; but that it is produced by a sort of post-excretory fermentation, which requires several days of time, and is effected in the water beneath the surface of the ground. He makes a very large estimate of the importance of the soil and substrata of a place in determining its liability to cholera. He denies that it can ever prevail over rock.

On this I would remark—1st, that it *has* prevailed upon rocky sites;\* 2dly, that this theory cannot, any more than Dr. Snow's, explain all the facts; 3dly, that a theory which will account for all other facts, will also explain those on which he relies.

Dr. Parkes and others seem ready to make use of a ~~recent~~ modification of Pettenkofer's views, which is certainly convenient and ingenious. This is, the hypothesis that the "germs" of cholera poison, once produced, are not destroyed for some

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\* See Brit. and For. Medico-Chir. Review, Jan. 1857, p. 66; also, Brigham on Cholera, p. 33; Drasche, Die Epidemische Cholera, Vienna, 1860; Kiehl, Ueber den Ursprung und die Verhütung der Senchen, etc., Berlin, 1865.

Dr. Parkes admits that special distribution of cholera starts as a general miasm has failed. X

① - See loose m. s. paper -

E.g. -  
St. Louis,  
on limestone.



A② Dr Lethby reports that in London, 1855 — in one Workhouse, supplied with water by East London Water Co. — (from Thames, contained by sewage) no cholera existed; while in another Workhouse not supplied with that water — cholera existed, 27 cases. Dr Lethby naturally ~~refused~~ refuses to ascribe all the cholera of London to East Water "stool" postage.

over



2

(At Croydon, Barking, Rugby &  
elsewhere in England, evidence ac-  
cumulate that irrigation of  
grass-lands with filthy sewage-water  
is inoffensive & profitable.

many sanitarians now prefer the  
earth closet (box carted away nightly, for fertilization)



of which we are fain to confess that in all probability cholera is now fairly naturalized as an endemic malady in eastern Europe. We had already been compelled to assent to the statement that cholera had become naturalized in Persia, but we were hardly prepared for the same disquieting fact as regards Europe; but that being so, all information as to the mode in which it spreads assumes an increased importance, and we have seen nothing of greater importance on the subject than an abstract of modern views on the subject by Professor Parkes in the appendix to the recently-issued Army Medical Report.

This deals at some length with the views of Pettenkofer, as recently enunciated by him in a somewhat modified form, in reply to adverse criticisms from Sander and Küchenmeister. There is no denying their importance, not only from the weight of Pettenkofer's authority, but from the influence they exercise on the minds of many, both in this country and abroad. They have materially modified modern research in the matter, and should they turn out to be wrongly founded, this influence must have been most pernicious. The foundation of Pettenkofer's theory rests on the assumption that the cholera contagium is mainly or entirely propagated outside the human body; and thus the malady, from his point of view, though readily carried by human beings, and in the main following the lines of human intercourse, is not, strictly speaking, contagious, but rather miasmatic. The quantity of this contagious matter, according to his views, undoubtedly tends to increase, but it does so in the surroundings of the individual, not in himself; and the most important of these foci of new growth is the ground itself; and on peculiarities of soil he holds that the development of cholera mainly depends. He rejects *in toto* the theory of propagation by drinking-water, which he says in many instances he has investigated was impossible. Shipboard has been selected as a telling instance, where neither soil nor ground-water could be imported into the case, and has by some been considered utterly fatal to the ground theory of cholera. This Pettenkofer does not admit,



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nati Lancet*, Sept. 1873.

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Journal*, Aug. 1873.

A, Philadelphia.

*Rettenbach*  
*or*  
*Chapman*





and yet is compelled to acknowledge that cholera has broken out in ships in epidemic fashion, though it is most frequently brought from the shore. Here he tries to import some new factor into the case analogous to the ground on shore, but seems to fail. Direct contagion, without any interference on the part of the soil, seems to be only too well established, yet Pettenkofer rejects it entirely. Nevertheless, in all probability the ground has some influence, though what it is seems as yet not quite clear; nor does it seem to be exercised in all cases. It is always a misfortune if a man resolutely blinds himself to any side of a question save that on which he himself is intent.—*Medical Times and Gazette, July 12, 1873.*



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Also Pettukoppe - versus cholera stool theory -  
Dr. R. Angus, Vols & Willagel, Baden Württemberg  
Dr. ~~Angus~~ ~~Angus~~ } against cholera are no such

Dr. Parkes, Dr. H. Letheby } dissemination by water (facts)  
Dr. Sum of Board of Health, Providence R. I.

show the experiment shows that cholera is uncontrollable by any practical system of external or quarantine measures as well as cholera-stool disinfection.

but by thoroughly good public health regulations. Dr. Austin Flint rejects the stool theory.

Dr. Quinn, Health Officer of Cincinnati, says of Cholera there, 1873, - "it is reasonably certain that the rice-water dejections of patients had nothing whatever to do either with its introduction or dissemination. Dr. White, Pres. of Board of Health in N. Orleans, also denied all evidence of importation of cholera into that city, in 1873.



Woman's Medical College of Pennsylvania,

North College Avenue and 22d Street,

PHILADELPHIA.



The programme of the meeting promised the "Conclusions on Cholera" and a plan of preventive measures, but none seem to have been offered.

We wish we could believe that the facts presented, were of a character to justify the feeling that any conclusion in which all could join, would be found from their examination. It is evident that this was not the case; the facts to a great extent being presented, apparently, for the purpose of supporting a previously conceived opinion. Indeed, in many cases, when facts were utterly wanting, it was boldly taken for granted that they must exist, apparently because the theory required it to be so.

A marked example of this was seen upon the question of the origin of the cholera of the present year in New Orleans. A most careful and minute examination made in good faith by the health authorities of that city, could not find the slightest reason for the belief that cholera was introduced there from abroad. Not a vessel had arrived from any place where cholera existed, for a considerable period before the disease appeared in New Orleans; not a vessel had arrived with the slightest diarrhoeal diseases on board; the first victims of the disease were not sailors, and had no connection with any vessels. In fact, every particle of evidence, positive and negative, seemed to prove, and did prove, to the entire satisfaction of the health authorities, that the disease was not brought there by any vessel whatsoever. This statement was published, and was reiterated at the meeting in New York in the most unequivocal manner, and yet there were persons who had not been in New Orleans at all, ready to assert and swear to the assertion, that the cholera was brought there by vessels from the Baltic Sea. Without one particle of evidence to support the assertion, they made it apparently because the necessities of their theories required it to be true. The faith and effrontery of such persons are something approaching the marvellous. Their faith and certainty of conviction seem to grow in exact ratio to the absolute want of evidence to support them. It is certain, that by that character of minds no great truths will ever be established. Such persons were, however, few in the meeting, and we cannot but hope, and hope implies expectation, that a calm review of the facts will enable sanitarians to reach some important conclusions. One paper was presented to the Association, but was not read, by Prof. Pettenkofer, an eminent sanitarian of Munich, in Germany, which seemed to contain a modification of the extremes of the controverted views on the subject of cholera. It is thought by some that the views of Prof. Pettenkofer may prove to be satisfactory to many who are anxiously seeking for the truth upon this subject. We propose hereafter to give an abstract of his paper.



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IN THE SECOND RO  
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THE THIRD ROUN  
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the ring, knives and pistols  
displayed.

The referee on the train de  
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who is responsible for the  
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where the fight took place, t  
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the wrong men. All hands  
night.

### METEOROLOGIC

WAR DEP'T, OFFICE CHIEF SIGN  
Washington, D. C., Nov. 19

### Probabilities

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### PENNSYLVAN

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PITTSBURGH, Pa., Nov. 18  
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### Philadelphia M

PHILADELPHIA, Nov. 18.  
Trade, last night, adopted  
delegates to the National B  
at Chicago, and approved th



Dr. Peters, New York



In 1848 and 1849, in London, Edinburgh, Glasgow, Plymouth, Dundee, Bristol, Liverpool, Hull, and almost every large city in Great Britain in which the first cases were accurately observed, the initial case or cases preceded the others by from one to several weeks (see Dr. Sutherland's report to Parliament, pages 13—17). The first attacks were isolated, and occurred at considerable distances apart as to place, and intervals as to time. This mode of outbreak may be regarded as one of the laws of an epidemic of cholera. ~~As the disease is generally brought by steerage passengers, immigrants, and the poorer class of travelers, the initial cases~~ in large towns generally occur in the low haunts and outskirts. They are widely separated, as if springing from distinct sources of infection, and often occur among old inhabitants, because clothing or fomites have been brought to them, or because they have visited or been visited by some one with choleraic diarrhoea, or cholera. However this may be, the New Orleans authorities have not yet succeeded in tracing the direct importation of the disease. "From December 1, 1872, to May 1, 1873, no vessel from Odessa, or any other port on the Black Sea, came to New Orleans. From January 1 to May 1, 1873, no vessel from the Baltic came to New Orleans. In January, 1873, *passengers* arrived only from Hamburg, Bremen, and Liverpool. In February, only from Bremen, Port Simon, and Liverpool. In March, from Hamburg, Liverpool, Palermo, Bremen, and Mexico. In April, only from Liverpool, Bremen, Hamburg, and Port Simon. It is claimed that none of these vessels, or any other, had deaths or sickness from cholera. Only two sailors were attacked with cholera, and only one died. Both were from the British ship *Belgravia*, which had no passengers, was some fifty days on the voyage, and they were taken ill ten days at least after arrival, when Asiatic cholera was already

*prevailing - April 14<sup>th</sup> & 16<sup>th</sup>.*



Kiev are in the most primitive and disgusting. every hot day a shocking odor ascends from that otherwise glorious town. A distinguished architect once boasted that he had built a thousand houses in Kiev but not one water-closet. It always requires as much sanitary inspection as Meshed or Mecca. The mortality in 1871 among the pilgrims and in the monasteries was very great.

From Kiev cholera spread easily to Poland and down the river Vistula to the Baltic. Last year it had obtained a lodgment not only in Hungary and Poland, but in the Baltic towns of Konigsberg, Elbing, Dantzic, Stettin, and also in Hamburg and Bremen. When cholera commenced in New Orleans, on Feb. 9, 1873, of course the steamers from Northern Germany, which touch at Havre, were first suspected, especially as the first death from cholera in New Orleans was that of a Prussian aged 56, and the next that of a Frenchman.\* But so many rumors were raised about vessels from Odessa, the Mediterranean, and the Baltic, that attention was quite diverted from the North-Sea steamers. But the similarity to the outbreak in 1848 and '49 was too great to pass unnoticed. 1. In 1848 the ship Guttemberg sailed from Hamburg, where cholera had prevailed from Sept. 7th, with two hundred and fifty steerage passengers; had several deaths from cholera while still in the Elbe, and arrived at New Orleans on Dec. 6th, after a passage of fifty-five days. She had no more deaths from cholera, but some from diarrhoea and dysentery, and doubtless had infected clothing on board. 2. The bark Callao, from Bremen, with one hundred and fifty emigrants, had eighteen deaths from cholera, the last one on Nov. 8th, doubtless also with infected articles on board. 3. The ship Swanton, from Havre, had seventeen deaths from cholera, arrived

\* These proved to be old residents.



after the death of Mary Payne, and a few days after she and her two sons occupied the same grave. Here are seven correlated cases in succession. The negro villages on the highlands and lowlands outside of the city suffered most severely. Dr. Poynor describes these villages as dense aggregations of little huts, with eight, ten, and frequently more persons crowded into one miserable little hovel. Any cleanly and sanitary precautions about these huts were never dreamed of. Excrement of every character was deposited in, between, and around the shanties. The mortality, of course, was very large, while the cleanest and best parts of Nashville generally escaped, as did Edgefield, a large town just across the Cumberland river.

The panic in Nashville was very great, and fugitives spread the disease all over the country, especially to the railroad stations to the north.

The outbreak in Franklin, Kentucky, has been best observed by Dr. Charles N. Edwards, of that place. He says: "The first well-marked case was that of Mr. H., a citizen of Franklin, who had been employed in Gallatin, Tenn. (just north of Nashville), while cholera prevailed there. He was brought home sick with cholera on June 14th, and was attended by Dr. F. The first fatal case was Mr. G. R., who had also been in Gallatin. Dr. F. was the third case, but recovered; next his child died of cholera; then his washer-woman was, at a distant house, seized, but recovered; then her daughter, who lived with her, died, and her two children."

Louisville escaped, as usual. In Cincinnati, a lady arrived about June 1st, from Nashville, nearly died of cholera, and then went on to Wheeling, West Virginia. One or more infected steamboats arrived from New Orleans and Memphis, and some of the most distinguished physicians of Cincinnati, those of the highest social and professional standing, informed me that cases could be traced to these vessels. In some of the hospitals which I visited, no record was kept of the names of the boats, streets, or numbers of the

H. Peters



prevailing, viz., about April 14th and 16th. As the disease was admitted to be Asiatic cholera, and of course was imported in some way, we may have to adopt Prof. Austin Flint's opinion ("Practice of Medicine," fourth edition, p. 499): "There can be little or no doubt that the special cause" (of cholera) "may be transported in clothing and other substances after the manner of fomites. In other words, the disease is portable, without being contagious or infectious." As the first fatal case (the initial cases are not always fatal) occurred on February 9th, we must suspect vessels from Hamburg, Bremen, Port Simon, or Liverpool. As the outbreak commenced with twelve cases in the week ending April 6th, we may suspect vessels from Hamburg, Liverpool, Palermo, Bremen, or Mexico, as bringing the fomites of the disease. As there was more cholera in Hamburg last year than in any other of these places, that is the most probable starting point, although many emigrants from Central Europe, where cholera was prevailing, also came to Bremen and perhaps to Palermo.

The above facts accord with the mode of introduction of cholera into New Orleans in 1848, when vessels from Hamburg, Bremen, and Havre, brought the disease, and the ship Swanton from Havre became infected by German immigrants before there was any cholera in Havre. At that time chests of infected clothing from Pesth, in Hungary, were more than suspected, almost proved, to have brought the disease. According to the latest accounts, there have been no less than one hundred and four thousand deaths from cholera in Hungary this year, up to Sept. 1, 1873, and there were many thousands in 1872, not only in Hungary, but in Poland, Prussia, and notably in the cities of Warsaw, Konigsberg, Elbing, Dantzic, Stettin, Dresden, Leipsic, Hamburg, and other places near the Baltic, and North Sea, or German Ocean.

It is very singular that cholera did not seem to spread down into Texas this year, but appeared to be carried by rail and steamboat to Mobile, Memphis, Nashville, Cincinnati, and many other places.

*Havre, however,  
very fatal at  
Derision, on the Red River.  
See Johnson's Report.*

*Peters*



Cholera lingered in Cincinnati longer than in any other Northern city. And it always seemed, if Dr. Budd, of Bristol, and his efficient aid, Dr. Davies, had been there, the epidemic could have been stamped out in a week or two. In Dayton, Columbus, Indianapolis, Pittsburgh, Wheeling, Chicago, and other places, active sanitary measures quickly checked the outbreaks.



minute, and throughout was strong. Latterly she suffered from dyspnœa, and subsequently was propped up in bed with pillows. She wandered a little at night, and on the day the bath was employed her intellect was a little obscured, and she passed her urine under her. At 7.42 P. M. of the ninth day of her admission she was placed in a general bath of 92°, her temperature in the axilla



THE CHOLERA IN NASHVILLE.—Dr. W. K. Bowling, in a very able article in the *Nashville Jour. of Med. and Surg.*, remonstrates against the truth of the statements made by Dr. John C. Peters to the Board of Health of this city, regarding the outbreak of cholera in Nashville during July last, and shows as plainly as can be done by an analysis of individual cases, that, 1st, The disease was not contagious. 2d, That there is not the slightest evidence that it was introduced through any "initial case," and that Dr. Peters's statement that he had "positive information that cases were brought to Nashville, and died there," is a sheer fabrication. 3d, That as regards preferred spots and places, instead of being, as Dr. Peters stated, "almost exclusively confined to the outer limits and low portions of the city," and that it "carried off hundreds of those living near the small streams, or so-called branches, licks, and runs of water, especially Lick Branch, upon one side, and Wilson's Spring Branch upon the other," the disease was most prevalent in localities where the drainage was perfect and malarial influences absolutely *nil*. Dr. Bowling says: "We have shown that the terrific mortality in the hamlet of New Bethel, which carried off nearly half its inhabitants, occurred in a high and dry region, thoroughly drained, and no branch or run in a mile of it. Also on Rolling-Mill Hill, with no branch or run near it, except the Cumberland River, and that separated from the village by a bluff of rock two hundred feet high. . . . On these branches, and all the low grounds they and their tributaries drain, there were but sixty out of eight hundred deaths, seven hundred and forty being on high land." He further stigmatizes Dr. Peters's report as "a tissue of misrepresentations from beginning to end, which will figure in sanitary science hereafter and serve a purpose for ring-makers and job-hunters." The only "localizing causes" which Dr. Bowling deems of value are destitution and the use of vegetables, fruits, and such animal products as butter, cheese, milk, eggs, or honey.

THE *Clinic*, of Cincinnati, also says, regarding the cholera in that city: "The report with which Dr. Peters hastily rushed into the New York daily papers, has done him no credit. It is superficial and untruthful, and his predictions have all proven equally false."

\* The dwellings  
 clean, barren, bare, and  
 crowded, and dirty.  
 New York Med. Record  
 Sept. 15, 1873.



a fresh mess or add a small pinch of baking soda to the food. Infants of six months may have beef-tea or beef-soup once a day, by itself, or mixed with other food. Babies of ten or twelve months may have a crust of bread and a piece of rare beef to suck. No child under two years ought to eat at your table. Give no candies, in fact nothing that is not contained in these rules, without a doctor's order.

III. *Summer Complaint*.—It comes from over feeding and hot and foul air; never from teething. Keep doors and windows open; wash your children with cold water at least twice a day, and oftener in the very hot season. When babies vomit and purge, give nothing to eat or drink for four or six hours, but all the fresh air you can. After that time you give a few drops of whiskey in a teaspoonful of ice-water every ten minutes, but not more until the doctor comes. When there is vomiting and purging, give no milk. Give no laudanum, no paregoric, no soothing syrup, no teas.

A TRAINING SCHOOL FOR NURSES is to be opened after November 1st, in connection with the Massachusetts General Hospital, and the future superintendent is visiting Bellevue Hospital in order to become familiar with the course of instruction already inaugurated in the latter institution. Thus far the school at Bellevue has fully answered all expectations.

THE MIDDLETOWN (N. Y.) PHYSICIANS have organized themselves into an association for the purpose of protection against "imposition by a class of people who never pay their physicians' bills, and without any other reason than to evade such payment, change from one physician to another and thereby escape." The secretary of the association is to keep each member informed of all persons who habitually refuse or neglect to pay their bills, and these will have to get along "without benefit of" doctor, or else pay "cash strictly in advance" for attendance.

THE SOCIAL EVIL IN ST. LOUIS.—A St. Louis judge has decided that the law "regulating" the social evil, and which virtually licenses houses of ill-fame, is unconstitutional, first, because it is a special statute, applicable to the City of St. Louis alone, while the State Constitution forbids special laws in cases where provision can be made by general laws; and second,



time by desiccation; that the tainted fæcal matters, though formed in water, may become dry enough to be carried, as dust, through the air.

This is, I believe, at the present moment, the theory which has the greatest number of influential advocates in England; and ~~some elsewhere~~ *over the whole of this country,*

I ask, can it be imagined that such cholera dust (if not endowed with the *vitality* of microphytic sporules or animalcular ova) could *multiply* as the cholera cause must, or could be swept over the ocean far enough to reach a vessel two weeks and more from the shore it had left?

The parenthetical words of this last sentence imply the direction in which my reasonings (and, I hope, those of my reader also) are, by exclusion, impelled. ~~See~~ *See clippings & m.s. note paper -*

III. An *organic* nature, that of a living organism, is thus suggested as most probably belonging to this undiscovered cause. The combination of *persistent identity*, with *extensive mobility*, can, I think, be *no otherwise* explained. I regard this as not at all a vague conjecture, the mere resort of ignorance; but as a logically obtained scientific hypothesis; needing but little, if anything, to make it a theory worthy of universal adoption and application. It has been, in such a sense, considered seriously by such careful reasoners as Sir H. Holland, Prof. Alison, and Prof. Max Pettenkofer.

I repeat the question—can it be imagined that

~~I agree with Dr. A. Flint (last. ed. of Practice, 1873) & with Dr. Swan of Providence, in rejecting altogether the excretory transmission theory of the propagation & extension of Cholera.~~



an excrementitious "dust," *not* organic or vitalized at all, should *multiply* itself so as to account for the world-wide spread of cholera?

If it *could*, observe then the other horn of the dilemma; how could it ever cease doing so; how could cholera ever stop, until the human race was destroyed? At all events, how could it disappear as it does, after visitation, from Europe and America, for long terms of years?

Variability in reproduction, under complex and partly unrecognized causes, is a characteristic of animal and vegetable life. *This* would account for such facts, and this alone.

The organic theory has been asserted in two forms:\* the vegetative or microphytic, and the

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\* *Vide* Holland's Med. Notes and Reflections; Essay on the Hypothesis of Insect Life as a Cause of Disease. I cite from this work the following curious facts:

"The Hessian fly, on its first appearance in America, afforded a singular example of slow progressive movement. First observed in Long Island, in 1776, it proceeded into the interior, at the rate of ten or fifteen miles in the year, destroying all the wheat in its progress. The spread of the *Blatta orientalis* in northern Europe is another fact of a similar kind."

"In October, 1836, a vast swarm of minute *aphides* passed over a wide district in Cheshire, Derbyshire, and other counties. The air was so thickly filled with them, that the clothes and faces of persons walking out of doors were completely covered. From observations taken, the



animalcular. The first is not set aside by any positive facts; but it does not explain any more than the second; while the remarkable mobility or migratory power of the mysterious agent in question points rather to the animalcular theory.

IV. To this, then, we are brought at last; with only one other alternative, as, not a substitute, but an amendment for it. I mean the view advanced recently by two members of the Philadelphia Academy of Natural Sciences, the late Dr. Wilson and J. Cassin;\* that reason exists for distinguishing a *third* kingdom of nature, besides animals and plants; for which they propose the name of *Primalia*. If such organisms as sponges, many infusoria, volvocineæ, diatoms, and desmidiæ, have attributes neither animal nor vegetable, and yet clearly organic, it is evident that our previous classifications of natural forms are incomplete.

superficial extent of the mass must have been at least twelve miles in one direction by five miles in another; but detached notices from other places make it certain that the continuous swarm was much more widely spread. No proof was obtained as to its rate of movement; but Manchester was infested for two or three successive days. Wherever generated, there is cause to suppose that the swarm was in transit from one place to another, and possibly brought nearer to the earth by some peculiar state of the atmosphere."

\* Proceedings of Acad. Nat. Sciences of Philadelphia.

Later, Haeckel in Germany announced a similar view — namely protista the intermediate kingdom.



So are our observations. With each increase in their means and facilities, come new discoveries. No limit to microscopic, any more than to telescopic possibilities. Because we have not *found* any peculiar cholera animalcules, or primalia, it does not at all follow that they have no existence.

The chief haunt and residence of cholera being in warm or hot climates, with luxuriance of organic development, this is strongly in favor of the hypothesis. So is its general prevalence in temperate regions during the warmer part of the year.\*

Against it, we have two facts especially; as follows:

*Firstly*, cholera has, on a few occasions, prevailed in cool or *cold* latitudes; as in winter in the north of England, and the north of Russia. As to this, it has been recorded that the winter of 1831-32, when it existed in the north of England, was, as shown by Mr. Losh's Meteorological Journal,† exceptionally mild. In Russia, also, the summer of 1830 was oppressively warm, and the disease began at Moscow in September. In the cities of northern Russia, moreover, the domestic habits of

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\* September has had, altogether, the greatest number of deaths. *Vide* Brigham on Cholera; G. Milroy, loc. cit., etc.

† Brit. and For. Medico-Chirurg. Review, April, 1856, p. 304.



the population, in heating their houses, maintain a sort of green-house, or internal warm climate, throughout the winter. Thus, any "germs" transported thither in the summer or autumn, if other favoring circumstances were present (as they are), might well be kept alive. Moreover, as Dr. Routh has shown, the poorer Russians throw out everything around their houses; and then melt the snow for their drinking water.

It may be incidentally mentioned, that the meteorological conditions most frequently coinciding with the outbreak and continuance of cholera, are, those of moderately high temperature, and stagnation, or deficiency of atmospheric change or movement.\*

*Secondly*, it has been very plausibly asserted† that no parasite, invading or residing in the human body, ever causes violent or destructive acute disease; but only slow local disorders. Before *trichiniasis* attracted the attention now drawn to it, this statement had more weight than now. Of animal or vegetable parasites there had been, perhaps, before, only one record of any that had endangered life by residence in or upon the body; that of the *mycetoma*, or disease produced by a

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\* Glaisher, Meteorology of London during cholera, etc.; T. H. Greenhow, loc. cit.

† J. Simon, Lectures on General Pathology.



peculiar fungous vegetation attaching itself to the limbs, in India, as described by Dr. Carter, of Bombay. And the effects of this were *slow*; no acute systemic malady was produced. But the lives destroyed by trichinæ lately in some of the German towns afford instances of importance. It is especially notable that these last parasites seem to act by *numbers*; a few may be detected in the flesh of animals or men, without serious injury to either; it is by multitude that they disturb seriously or even kill.

However, the "organic" theory does not require *parasitic* action to make it possible. Life is only predicated as an attribute of the cholera-cause in accounting for its variable multiplication and migrations. Its mode of action upon the human body is a separate question. It is most probable that it is *not* by parasitic residence; but by entering the system as an organic *poisonous material*. For the action of such material, of animal origin, abundance of analogy exists; as in the toxic effects of cantharides, of insect-stings, venom of serpents, and of rabid animals; of dissecting wounds, and spoiled meat or sausage used as food.

My theory, then, is as follows: That the cause of cholera is a (yet ~~undiscovered~~) protozoon, or primal organism, of extreme individual minuteness; which, on entering the human body, affects it as an organic poison. That the varying quan-

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Hallier's rice-fungus -  
(*Coniothecium Stillerii* of C. G. S. of Texas)



investigators of his position, was fixed some-  
presence of an *intestinal* fungus as a cause of cholera. The report  
of the British Commission, so far as can be discovered from extracts  
here accessible, has no bearing on the genetic relation to cholera  
of fungal elements *in the blood*. May it not yet be found that a  
multiplying cell of Hallier's plant (his micrococcus?) is the cause  
of cholera? The products of such a cell, the fungal character  
sought for in the intestines by the English investigators, might be  
as harmless there as the crystalline thread of Safford's plant in the  
bladder, and yet its multiplication in the blood might prove as  
fatal to the organism as pernicious fever.

The following considerations regarding the pathology of cholera



So strong was the expectation, aroused by these facts, that the cause of cholera had been discovered by Hallier, that two physicians, well qualified for the task, were detailed by the English government to investigate the subject. After a most carefully conducted research they reported as follows:

"1. No cysts exist in cholera stools which are not found under other conditions.

"2. Cysts, or sporangia of fungi, are very rarely found under any circumstances in alvine discharges.

"3. No special fungus has been developed in cholera stools, the fungus described by Hallier being certainly not confined to such stools."

*Dr T. R. Lewis*

OK



tity or number of these organisms may in different cases account (along with individual predispositions and exposures) for the unequal violence of different epidemics; as in the case of trichiniasis. Choleraic diarrhœa or cholerine, so frequent *before* as well as during and after the prevalence of cholera, may in some instances at least be explained by the action upon the alimentary canal only, of a minimum quantity of the cause. The dreadful fatality of some Indian seasons, is on the same view referred to an extreme *accumulation* of it.

A most important part of the theory is, further, that which concerns *promotive* causation. What conditions favor and maintain in life, multiplication and migration, this *ens primalis*?

All the facts answer, as I believe, that *animal matter in a state of rapid and foul decomposition*, putrefaction, along with moderately high (not the highest) temperature, and ordinary moisture, will afford those conditions; and that *nothing else* is required to explain the whole history of the propagation and extension of cholera. Nothing, I mean, but the admission of the existence of the "protozoon," which in ova or in maturity, or both, may fly "on the wings of the wind;" or be conveyed to less distances by water; and, with these the above-named conditions of its vital maintenance, as its food and "habitation."

It is, in my mind, *obvious* that this theory will



explain all the facts. I believe, also, that *some* well-known facts can be explained by it *alone*.

As to the general facts, I can scarcely do better than repeat, with some extension, words written eleven years ago, and referred to at the beginning of this essay.\*

The Gangetic delta being the great focus or centre of cholera, certain traits in the usages and circumstances of that locality and its population have a direct bearing upon the subject. Among these may be named the peculiarity of the inhabitants in disposing of the dead. Most of them either burn the bodies, and this very imperfectly, or throw them into the Ganges or its tributary streams; that river being held to be sacred—a gateway to heaven. In the Hooghly river, Stewart Clark says,† he has seen “upwards of fifty dead human bodies, besides numbers of carcasses of lower animals, floating within sight at one time.” At Allahabad, at the junction of the Ganges and the Jumna, many persons drown themselves as devotees, and others are often drowned by the pressure of crowds immersing themselves in the sacred spot.‡ The worship of Juggernaut has

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\* On Animal Decomposition, etc. By H. Hartshorne, M.D. Philadelphia Med. Examiner, August, 1855.

† Hygiene of the Army in India, p. 63.

‡ Stocqueler, Handbook of India, p. 366.



produced a greater mortality still. The average of pilgrims annually visiting the temple of this deity was, a few years since, 120,000. Of these, thousands die from famine, fatigue, and exposure, and are left on the road to rot.

The annual wide overflow of the Ganges, and its withdrawal in the dry season, must increase the amount of animal decomposition. The Nile also inundates, every year, the land of Egypt. How is it, then, that cholera has but half a dozen times invaded the latter country, while always at home in India? I conceive the difference to have a twofold, and yet very simple explanation. The climate of Egypt is proverbially *dry*, from the vicinity of the great deserts. Decomposition there meets with its *minimum* of rapidity. The skin of an Ibis, shot for me in Upper Egypt, simply cleaned without anything antiseptic, and hung up on the deck of a boat in the sunshine, kept for two weeks without any odor or other sign of putrefaction.

Further, the inhabitants of Egypt neither bury nor drown themselves from superstition in the river Nile. If their habits were not, in some localities, especially when crowded away from their homes, uncleanly, there ought, and would, I believe, *never* be any cholera in Egypt.

The Hindoos, however, must be inconceivably filthy in many ways. S. Rogers, F.R.S., a British



army surgeon, gives the following example, in a Report on Cholera in Madras:

“The Coom river nearly encircles the village of Chintandrepett. This river was made a privy of by hundreds of natives, daily; when the water became low, the smell was most offensive. In the hot weather, an attack of cholera was the certain result, the only victims being those residing within a short distance of its banks.”

In Europe and the United States, as well as in India, influences belonging to closely aggregated communities have always been observed to display a power to propagate cholera. It comes most often, stays longest, and is most destructive, in the densest and filthiest cities, and in the worst quarters of those cities. In even the densely populated country of Holland, Suermann found the mortality to be 1.54 in 1000 in rural districts; in the towns, 8.93 in 1000. Moscow, Paris, Marseilles, Liverpool, Manchester, Edinburgh, New York, and Quebec have had great mortality from it. That of Moscow, in 1832–33, was 1 death from cholera in 32 of the whole population.

Dr. Baly says, in his “Report” upon cholera in England, that “in the evidence received, lowness of site is not very prominently set forth among the unfavorable sanitary conditions; being, in fact, specifically mentioned only *five* times; while, out of 68 places where cholera raged, bad ventila-



tion and overcrowding of houses are mentioned *fifty-four* times, defective drainage twenty-eight times, cess-pools, open sewers, etc., sixteen times."

Three prisons at Wakefield, all on one plot of ground, seventeen acres in extent, differed\* in cholera mortality precisely in proportion to their respective sanitary conditions. Stewart Clark mentions corresponding facts in India. This author also mentions a case narrated by Dr. Thompson, in which cholera affected one side only of a ship, which was foul; the disorder ceasing when purification was effected.

Very important testimony exists as to the influence of the *drinking water* of localities. Having shown that Dr. Snow's theory is insufficient, we find such testimony available still in regard to the propagating and extending power of *animal contamination*. Thus, Bethlehem Hospital, supplied by an artesian well, had, in 1849, among 400 inmates, no case of cholera. It was the *only* large lunatic hospital in London which escaped; as it was the only one supplied with spring water. In the districts of London supplied from the Thames above the entrance of the sewers, the mortality ranged from 8 to 33 in 10,000 of the inhabitants; in those supplied from below the entrance of the sewers, from 28 to 205 in the same number.

\* Baly, op. cit., p. 20.

In 1866, much the largest number of cases of deaths from cholera occurred in East London, supplied from the Thames when it is still contaminated. So in Kensington, Philada. 1866.

London & East London Water Supply Companies' Report, 1873.  
See Chandler's Report, Am. P. H. Assoc., 1873.

See Report, however, of Prof Chandler, in Proceedings of Am. Pub. Health Assoc., 1873.



In this country, Dr. James Wynne's report\* affords, upon almost every page, matter of exactly the same purport as the above. In St. Louis, Louisville, Buffalo, New York, Philadelphia, Boston, etc., similar facts were recorded. It is unnecessary to extract them, they are now so familiar and so commonly accepted.

All of Pettenkofer's and Thiersch's observations, in regard to subsoil accumulation and transit, and fæcal fermentation after discharge, range themselves now naturally under the one general fact which they exemplify, viz., that *animal decomposition is the one great promotive cause of cholera*; to which heat and moisture, etc. are merely adjuncts.

But, that which suggested first to me this opinion was, the singular history of the outbreak at Columbia, Lancaster County, Penn., in September, 1854. Cholera had never visited that town before. It is not large or populous, in a rural site, on the Susquehanna, not densely built enough to exclude malarial fevers. Why should it have cholera at all?

Visiting the town, with other physicians of our city, during the epidemic, I learned that an exceeding drought had reduced the channel of the river to an unusually low ebb, and that, in its bed,

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\* Presented to Parliament, and published in 1852.



a short space above the town, a number of carcasses of sheep and other animals, thrown from the railroad trains, etc., were putrefying rankly in the sun. A reservoir which supplied many of the people with drinking water was filled from the river not far from that spot, and the wind blew from it directly over the town. The first subsidence in the disease, we were afterward told, attended a decided change in the wind.

At Pittsburg, shortly after the above events, a similar epidemic occurred. A gentleman on a visit to that locality not many days before the disease broke out, informed me that the same condition of the river existed there, with a like abundance of accumulated *putrefying animal matter*, exposed to the sun.

In Rhode Island, in the autumn of the same year, I was informed that the local existence of cholera in a few spots, otherwise very healthy, might be traced, in coincidence at least, with a practice not uncommon along the shore of the sea or bays, of dragging up fish in quantities by nets, and spreading them out to rot for manure.

Enough, then, of these facts and of their argument. There remains the great practical question, which they ought to help us to solve—what are the best measures for the local exclusion or prevention of cholera?

[End of 34<sup>th</sup> Lecture, 1873]



## PREVENTION.

*Quarantine* is ~~now~~ <sup>still</sup> urged by some, and appears to be ~~even~~ contemplated by the Government as a part of its duty. Is it available? Will it do any good? I say, *no*. Theoretically, if the views advocated in the preceding pages are correct, it falls to the ground of course. But we have more than that to say against it. It *never has succeeded*; and *never can*. Let us look at the facts.

I take the following from Dr. Brigham's work on cholera, published in 1832:\*

"In Russia, immense lines of troops were formed for arresting its progress; St. Petersburg was entirely surrounded by *cordons sanitaires*; but all these regulations, enforced by a powerful despotic government, were unable to prevent the approach and the spread of the cholera throughout the Russian Empire. The efforts of Austria were equally unavailing; for in a short time the disease passed her triple cordons and invaded the country from Poland. Prussia employed sixty thousand of her best troops to enforce her rigorous restrictions, and travellers bear testimony to their severity. And what (says the American Journal of Medical Sciences, May, 1832) have been the results? An immense expenditure of money, the suspension of commerce, a stop put to industry, multitudes de-

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\* P. 302.



prived of the means of acquiring subsistence, and whole families plunged into misery and rendered favorable subjects for the disease; but *no stop to its extension*; on the contrary, its progress was rendered more fatal. As an instance of this, Breslau may serve as an illustration and a warning to other cities. That city contained 90,000 inhabitants, active, commercial, and industrious, many of them manufacturers and artisans. A quarantine of twenty days, with difficulties almost insurmountable which it entailed, was established at the borders of the province, and maintained with a rigor which might serve as a model to other nations. But, in the midst of this apparent security, a woman living in a damp part of the town was attacked by the cholera, and in a few days the disease spread. *The most minute researches on the part of the public authorities could not discover any communication between this woman and any stranger or goods suspected of being infected.* But when the disease spread, the authorities saw *too late* the deep injury which their sanitary measures had inflicted; a multitude of families, and thousands of individuals, were plunged into extreme misery, for the sudden cessation of commerce, and consequent suspension of labor, had deprived them of the means of subsistence.

“Taught by sad and lamentable experience, Russia, Austria, and Prussia withdrew their cordons, and acknowledged not only their inutility,



but that they are productive of immense evils. Indeed, all the nations of Europe are (1832) abandoning severe quarantine regulations."

Dr. Alison, of Edinburgh, wrote thus in 1854:\*

"It is a fact that cholera has made its way, not uniformly, but very generally, *in spite of cordons and quarantine regulations.*"

Dr. Gavin Milroy, one of the ablest and most industrious sanitarians of our time, published, about the same year, an essay with this title: "*The Cholera not to be Arrested by Quarantine.*" A writer in the Brit. and For. Medico-Chirurg. Review (July, 1861) cites from that and many other authentic sources facts of great interest bearing on the subject. This is his account of the state of quarantine in different countries:

"What is most remarkable in the quarantine regulations of different countries at present, is the fact of their want of accordance; hardly any two being alike. Another noticeable point is, that, the more liberal the government of a country generally, and the freer its institutions, the fewer and less stringent are the quarantine restrictions. In the Baltic States, in Sweden, Denmark, Prussia, Holland, the regulations formally enacted may be considered almost as a dead letter; so in Belgium, where they are rather nominally than really in force. In the United States of America, each

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\* Brit. and Foreign Medico-Chirurg. Review, Jan. 1854.



State of the Union has its own code; all of them, according to a resolution of the Quarantine Convention held at Philadelphia in 1857, inefficient and often prejudicial to the interests of the community. In Chili and Peru, and along the whole western coast of South America, the tendency is to disregard all quarantine regulations, as interfering with the freedom of commerce. In that anarchical country, Mexico, quarantine is under no legislation, the Board of Health having unlimited power, which it sometimes exercises most tyrannically. In the South of Europe, in the old kingdom of the Two Sicilies, the codes are, or were, most elaborate and rigorous. In France and Sardinia, they have of late years undergone revisal; and yet, though somewhat improved, they are still open to great objection; fortunately, however, they are mildly enforced. In the Ottoman dominions—including Egypt, in which, little before 1840, there were no quarantine restrictions—a system has been established as elaborate as could well be contrived, and as inefficient as can well be imagined, being totally in opposition to the feelings and habits of the people.”\* *Pettuker, 1872.*

All are familiar with the entrance of cholera from Arabia into Egypt, and afterward Europe,

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\* At Marseilles, in France, the people are said to have lately, under panic, asked for the restoration of the quarantine.



in the spring and summer of 1865. All existing regulations clearly failed then. We cannot but be astonished that, at ~~the late~~ "Cholera Convention," held at the instigation, and almost under the dictation, of the French Emperor, increased rigor of quarantine should have been (against the remonstrance of a number of delegates, it is true) insisted upon as the desideratum hereafter. Whatever validity such an enactment may have in political relations, let us hope that it will have *none* whatever in a scientific aspect; as it contradicts facts, reason, and true expediency. ~~XX~~

The *inefficiency* of quarantine is a matter of demonstration. As the author just quoted remarks,\* "quarantine, even when rigidly enforced, has not kept out diseases of the contagious nature of which there is no question; such as small-pox, and other exanthemata. In Malta, for instance, we are assured on good authority, that in the short space of seven years, 1829-1835, in spite of quarantine regulations for their exclusion, that island was twice invaded by small-pox, one epidemic proving fatal to 1500 persons out of a population of 114,000; and also by measles, scarlatina, and hooping-cough. Yet at Malta the quarantine system has been enforced very regularly, and under more favorable circumstances as to efficiency than anywhere else."

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\* Review, p. 40.



Quarantine, if sound in theory even, could not avail, never has availed in practice. Its infraction for smuggling and other inducements, is everywhere constant and notorious; *this cannot be prevented*. Macaulay (History of England, vol. v. p. 52) states that when a contraband trade was, in the time of William III., carried on between France and England on the southeastern coast, "it was a common saying among the inhabitants, that if a gallows were set up every quarter of a mile along the coast, the trade would still go on briskly."

One might think the history of *blockade-running*, during the late rebellion in this country, might afford ample illustration and confirmation of this. Vain, indeed, would be the attempt to close our coast against the introduction of cholera, were it as contagious as small-pox, or as plague was once imagined to be.\*

The *evils* of quarantine are great, almost incalculable. Sir John Bowring, speaking in the House of Commons in 1841, gave it as his belief that the losses from quarantine in the Mediterranean alone were not less than two or three millions sterling a year.

But what if, instead of preserving, quarantine

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\* The Governor of Eupatoria is said to have wished the British and French troops to undergo quarantine, at the opening of the Crimean war!

Parkin: "the evils ... would be  
10 times greater than that of the disease itself"



-actually involves, often, sacrifice of *life*? No doubt this has many times occurred. With yellow fever, the quarantine epidemic in New York harbor, a few years ago, exemplified this. In various quarters reports of travellers show the *miseries* and dangers of the lazaretto, and of the confinement on the vessel detained.

What more do we need to show this than the very recent instance of the steamer *England*, at Halifax? Forty passengers, one account says fifty (out of 1202), died on this vessel during the voyage. She was prohibited from entering port; all were detained on board, and, by April 14th, 130 more deaths occurred! In all, 159 died while in quarantine. If the twelve hundred passengers had been *landed* and *scattered*, I, for one, doubt the occurrence of the disease in a dozen of their number; especially as it was reported as *altogether confined to the steerage*.

Were such measures sure to preserve from the epidemic the whole people of our continent, a *hecatomb* like this might find excuse. In face of facts, I regard it as a barbarity. Pelissier, in Algiers, was thought a monster, for suffocating a band of guerrillas in a cave; but what is this case of the *England* more like, except in motive? It is closing up hundreds of people for death; as though one might lock the doors, and bar the windows, against all escape of a thousand people from a burning church; such as that of which we



Marseilles is right on the  
travel and trade course between  
Egypt & France, <sup>including</sup> Paris,  
1831-2, chd. in Egypt & <sup>different parts of</sup> France,  
not at Marseilles — tho no  
quarantine then.

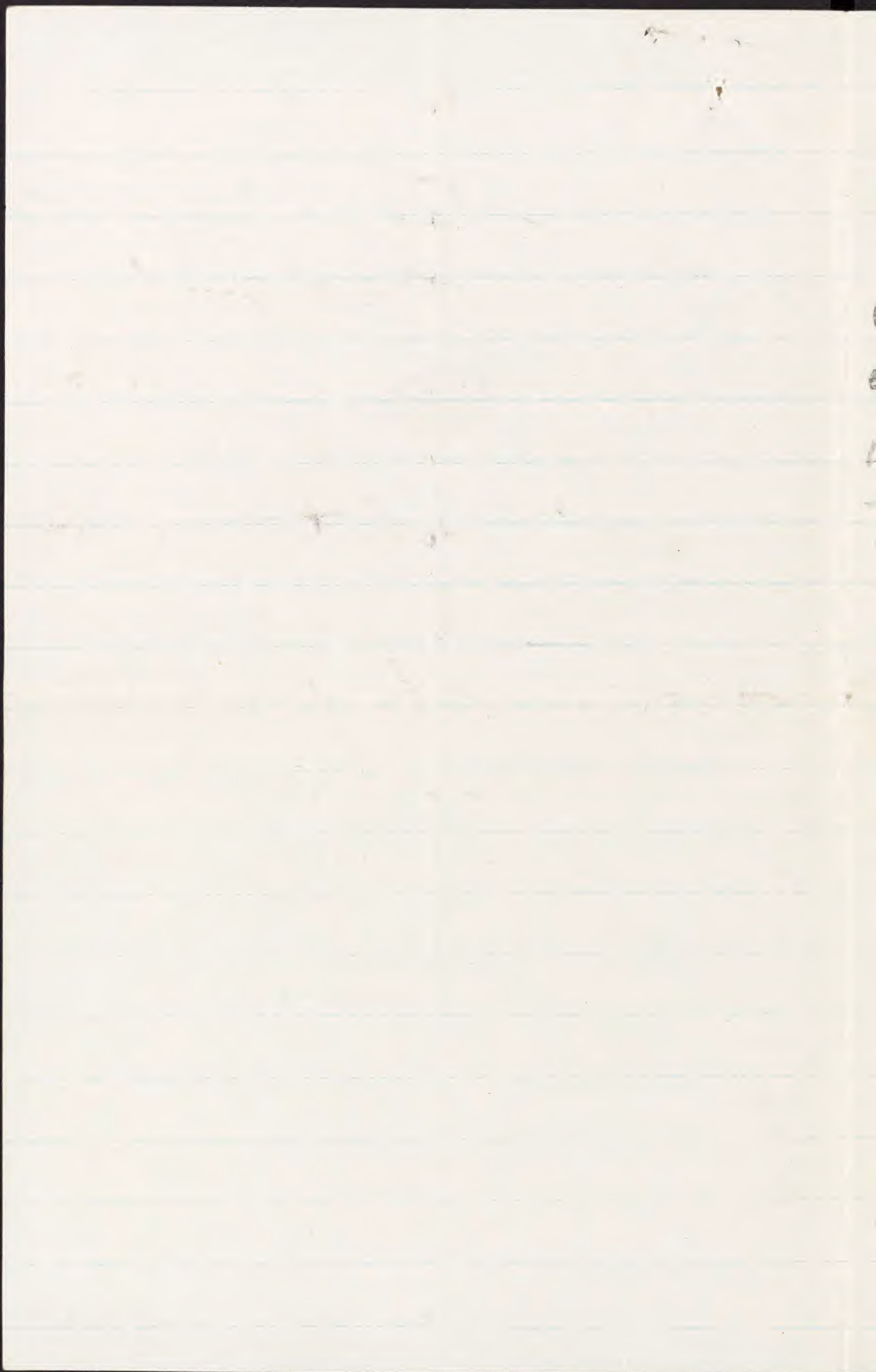
1835 — at Mars, — not at Paris  
nor in Egypt. — There, too, are  
examples only.

### Conclusion:

London Council of Health —

"It is clear, even if we admit  
the doctrine of contagion to be estab-  
lished — that quarantine regulations  
miss their end, for negligence, in-  
venience, delays, & prejudices engendered  
by them; and become powerless before the sub-  
terfuges, <sup>evasions</sup>, false oaths and all other  
means of easy escape from them."







(Pellarin and Worms

of Paris, contagionist, assert  
(worms) "a doubt that the best  
estab. quarant. can protect us  
with certainty against new  
invasions." Isolation of the  
first cases is urged instead.

This too, must be practically  
impossible — even if not  
barbarous — & also useless  
(Boston cases).

Death of Dr Gould —

Pellarin funeral — <sup>fun</sup> ~~large~~ attended by members  
of the profession — no cases following.  
A poor woman, at the same time, died  
there, & almost deserted, — except by a physician.

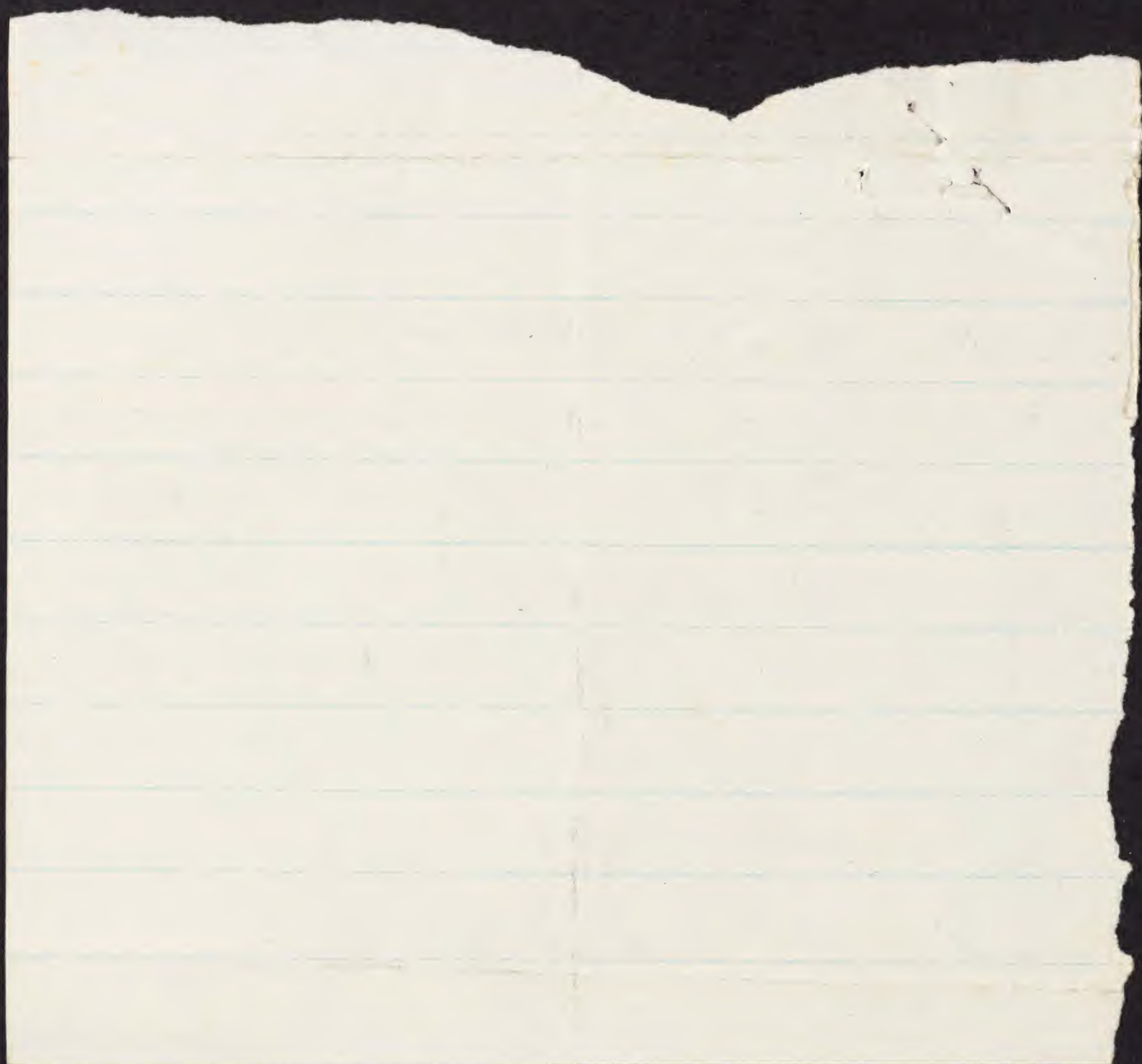






An instance of importation.  
Cot Bey <sup>showed that in</sup> 1831, so far from the  
pilgrims from Mecca <sup>leaving Mecca when they pass Cholera,</sup> carrying cholera  
to Egypt 1700 pilgrims arrived at  
Cossow <sup>on their way -</sup> no cholera occurred there; they  
reached the Nile, where Cholera was already  
several of them were affected like others.  
The cholera marched in the very opposite  
direction from there; they went down  
the Nile towards Alexandria; cholera as-  
cended it to Cairo & further out uppe-  
r Egypt. This was an example recorded on  
an spot at the time.





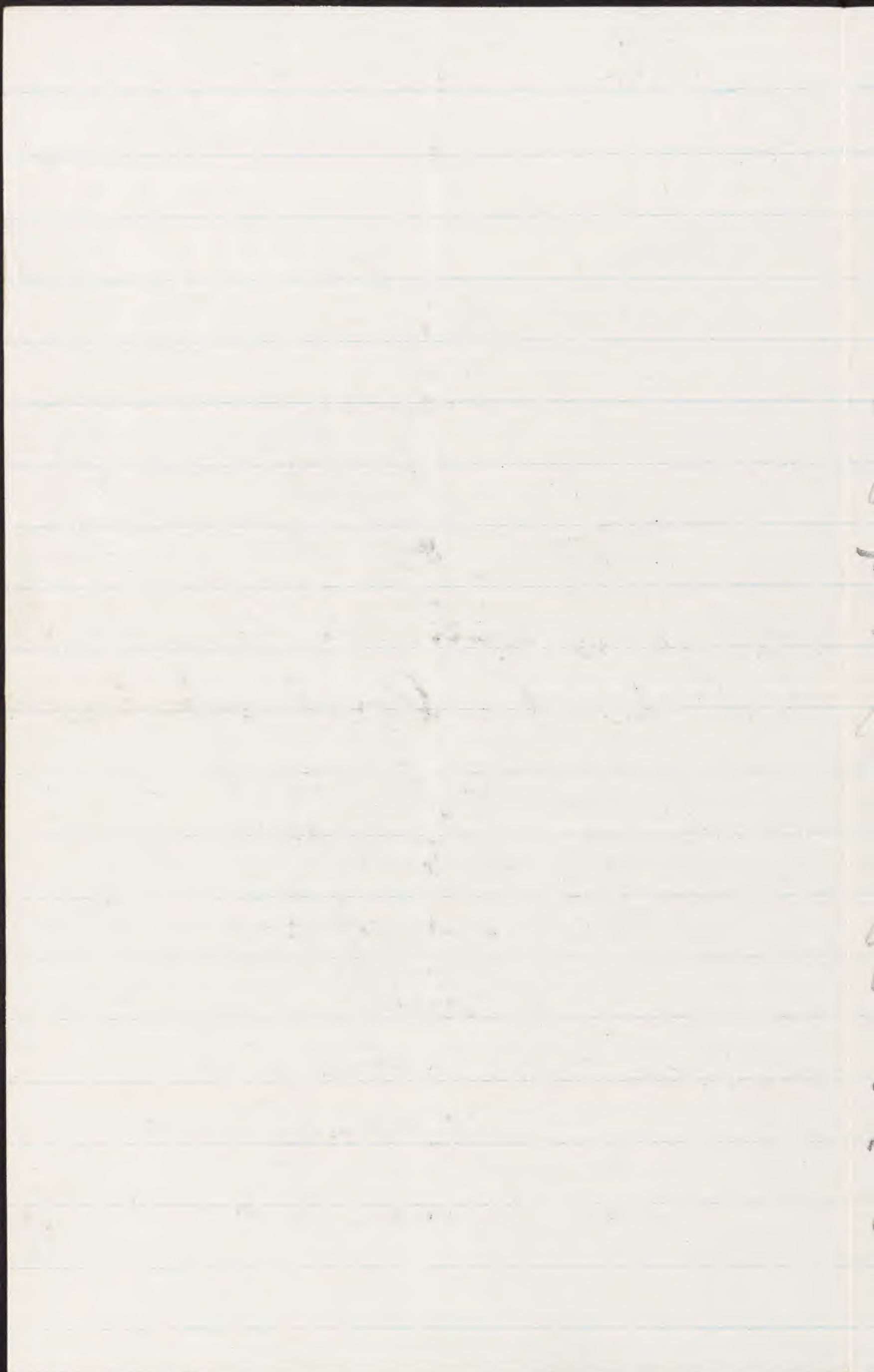


Says Carzalas of Paris.

(Univ. med. Sept, 1866)

"Since the principle of isolation — quarantines, sanitary cordons, sequestration, &c, as means of preventing the general spread of chol. is useless, because the malady is not contagious; since the principle would still be illusory, if cholera were contagious, because its application could never be rigorous enough to give it the chance of being efficacious; since, lastly, this principle is improper & unsuitable for the protection of healthy countries and indiv. Dangerous barbarous for those which have been attacked, & most injurious to the general interests of ~~civilized~~ states, of commerce, industry, the sciences & arts, we may announce







it without inconvenience for  
any one and with advantage  
to all.

In a word: (he continues)  
Medical Science, in proclaiming  
aloud that Cholera is no more  
truly contagious than a que, and  
that it is contracted like that  
malady by local infection;  
and governments, by suppressing  
completely, ~~the~~ institution of  
quarantines, and replacing it by  
a code of sanitary regulations  
applicable to all countries & all classes  
of people, would thereby render  
an immense service to humanity.




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Whatever diversity of opinion there may be about the causation of cholera—whether air or water is the chief agent for its propagation—few, we imagine, will differ with the Registrar-General in the remarks with which he closes his review of its history as written in the records of his department:—

“In London cholera has not only been less fatal than it was in previous epidemics, but its fatality has been reduced almost to insignificance in several of the districts by the mere force of hygienic science, before which the destroyer has retreated step by step; never, however, losing an opportunity of asserting its full power wherever negligence or ignorance presented an opening, either in England or in the cities of the Continent of Europe.

“Cholera obeys certain laws, and the knowledge of those laws renders its subjugation in Europe practicable, provided all the people as well as the government will co-operate in the work. This, it may be hoped, will be done, and it only remains for the metropolis of this empire to hold its own, and to keep the lead.”—*Med. Times and Gazette*, Dec. 15, 1866. 



often appears almost purely fortuitous, is, after all, the result of design.

In 1849 the estimated population of London was 2,286,635, and the deaths in the whole of that year from cholera were 14,137, from diarrhœa 3899, and from cholera and diarrhœa together 18,036. In 1854 the population had increased to 2,504,300, and the deaths from cholera in 52 weeks were 10,738, from diarrhœa 3147, and from both diseases 13,885. In 1866, out of an augmented population of 3,037,991, the deaths from cholera in 23 weeks were 5548, from diarrhœa 2692, and from both diseases 8240.

The remarkable difference in localization which the recent epidemic exhibits compared with those of 1849 and 1854, will be appreciated in the subjoined calculated ratios of deaths to population :—

*Deaths to 10,000 living.*

DIARRHŒA.			CHOLERA AND DIARRHŒA.		
1849.	1854.	1866.	1849.	1854.	1866.



*Hygienic Precautions against Cholera.* The *Gazette des Hôpitaux*, Sept. 22, contains a capital paper on Hygienic Precautions against Cholera, drawn up by the Comité Consultatif d'Hygiène, and addressed to the Minister of the Interior. It states that the mortality caused by the Paris epidemic in 1865 was much lower than that of 1832, 1849, and 1854; that out of the 300 women employed by the Bureau de l'Assistance Publique in washing and cleansing the linen of the cholera patients, not one had died of cholera; and that only two cases had occurred amongst the 911 persons employed as bearers or otherwise at funerals. These good results are attributed to sanitary and hygienic measures public and private. The report proceeds to discuss the merits of most kinds of disinfectants, and for purifying water gives the preference to vegetable charcoal over the permanganate of potass. The form recommended is *braise de boulanger*—Anglicè, "baker's breeze," which, we suppose, is a sort of charcoal remaining from the wooden fagots employed to heat ovens. This substance is directed to be put into the fountains which supply drinking water, so as to form a filtering bed in the proportion of two kilogrammes to every hectolitre of water, and it is to be renewed weekly. The sulphate of iron is the favourite disinfectant for *fosses d'aisance*, drains, etc. We are somewhat surprised to see ammonia recommended as a gaseous disinfectant on the ground of its opposing the growth of mould, microscopic fungi, etc., and of its exercising a favourable influence on those who breathe it. In England we think the contrary in both particulars. Disinfectants, as carbolic acid, etc., should be placed at every aperture, by which air escapes from a cholera ward, so that the disease may not be propagated in the vicinity. Such are some of the points which strike us as novel in this useful paper.—*Med. Times and Gaz.*, Sept. 29, 1866.

*Curious Physical and Allotropic Properties of Acetate of Soda.*—Prof. JEANNEL, of Bordeaux, presented to the Academy of Sciences, a note illustrative of the "History of Acetate of Soda," in which some curious physical and allotropic properties of this substance are detailed. We have not yet had an opportunity of seeing the paper, but M. Legrand, in the *Union Méd.* for

April 14, gives a brief account of some of its contents. From this it appears that crystallized acetate of soda melts in its water of crystallization at a temperature of  $+58^{\circ}$  Centigrade, and when it is exposed to cold, after being dissolved, it crystallizes at this temperature, which remains stationary during the whole time that the crystallization continues, so that acetate of soda in crystallizing presents a fixed point at  $58^{\circ}$  C., just as water, in the crystallized state, presents in melting a point at  $0^{\circ}$  C. Dissolved acetate of soda which is exposed to cold but secluded from the air, either in a vessel that is corked or one that is simply covered over, does not crystallize; but what is in the highest degree surprising is that, while cooling, thus protected from the air without crystallizing, it retains in a latent condition the greatest portion of the caloric which it had absorbed when entering into a state of solution. This caloric reappears and is disengaged when the crystallization of the salt is induced by simply exposing the solution to the air on uncorking or uncovering the vessel which contains it.

This singular property leads to a curious result. The temperature of  $60^{\circ}$  C. is easily obtainable from the sun's rays concentrated under a glass frame, and therefore the solar heat suffices for the solution of acetate of soda. But if this solution be effected in a corked or covered vessel, it will retain the greater portion of the caloric absorbed, and will restore this when convenient on the vessel being opened. And the quantity of caloric so absorbed is considerable, for 1 kilogramme of the acetate melted and cooled down to  $0^{\circ}$  C. will disengage, on removing the crystalline condition, sufficient caloric to melt 360 grammes of ice or raise 360 grammes of water from  $0^{\circ}$  C. to  $79^{\circ}$  C.

"In fine, here is a means of magazing solar heat. What will come of it in practice? Will human industry be able some time hence to store up for winter a provision of caloric which has been collected during summer? Why not? The observations of M. Jeannel are, as it were, the first steps on this seemingly fantastic path."—*Med. Times and Gaz.*, April 21, 1866.

*Presence of Marine Salt in the Maritime Atmosphere.*—M. GILLEBERT-DHERCOURT read a memoir at a recent meeting of the Academy of Medicine on the "Presence of Marine Salt in the Maritime Atmos-

Working is copper?

1866

Hygienic Precautions against Cholera



centists in this country, and he will doubtless fully maintain the reputation of the school.

OBITUARY RECORD.—Died, in Columbia, S. C., Oct. 15th, in the 57th year of his age, R. W. GIBBES, M. D., an eminent practitioner and naturalist.

— At Chicago, Oct. 10th, of cholera, DANIEL BRAINARD, Professor of Surgery in Rush Medical College.

— In Cincinnati, Oct. 20th, 1866, aged 60 years, Brig.-Gen. CHARLES S. TRIPLER, Surg. U. S. A., and medical director of the Department of the Lakes. Dr. T. was one of the oldest surgeons in the army, and was highly esteemed for his ability and zeal, as well as for his honourable conduct, during his long and faithful service.

— At Greenwich, N. J., April 23d, 1866, WILLIAM BELFORD EWING, M. D., in the 90th year of his age.

#### FOREIGN INTELLIGENCE.

*Influence of Sleep on the Appetite and Reparative Powers.*—If the sleep be broken, the appetite, with digestion and assimilation, are greatly impaired. Indeed, too much attention cannot be paid to this point, for from the loss of appetite patients rapidly waste, and the reparative parts of the system are greatly lessened, and thus the recovery is greatly retarded. Indeed, the loss of appetite resulting from want of sleep may completely wear out the patient, and be the chief influence causing death. It is thus of the utmost importance to secure to patients sufficient sound and refreshing sleep. This should always be accomplished when possible without the administration of medicines. The ventilation of the room should be carefully looked to, the diet must be carefully regulated, and regard must be paid to the amount of stimulants given. Often sleep is prevented by these latter being administered too late in the evening, or, on the other hand, if patients be very weak, their absence may cause wakefulness, and patients previously restless not unfrequently fall into a refreshing sleep when stimulants are freely administered. All undue excitement before the usual time of sleep must be avoided. If pain prevents sleep, this must be allayed; and if the restlessness be caused by cough, this should be remedied. The cough of phthisical patients not infrequently results from sore-throat. This is

then red, injected, and it may be ulcerated. In such cases local applications to the throat are efficient remedies; one of the best is that recommended by Dr. Edward Smith. An eighth or tenth of a grain of morphia dissolved in a drachm of syrup or glycerine should be either painted on the throat with a soft camel's hair brush, or, which is better, swallowed slowly. This application frequently allays the cough, and allows sleep. If the cough proceed from irritation in the chest, this may often be allayed by counter irritation under either or both clavicles. For this purpose either a mustard poultice, or a blister, or a strong solution of iodine may be applied. Inhalations, moreover, often succeed when given to allay cough: iodine or creasote inhalations are often of greater service than those of simple steam. The patient should be directed to rinse out a jug with boiling water to heat the vessel, and then to pour into it a pint or a pint and a half of boiling water; into this twenty drops of the tincture of iodine or the same quantity of creasote should be dropped. The vessel should then be covered over with a towel, and the patient must put the mouth and nose under the towel. This inhalation should be continued for five or ten minutes. If the cough be paroxysmal and violent, a mixture of laudanum with some chloric ether and tincture of lobelia inflata may often be given with advantage.

Sleep should always be obtained if possible without the use of large doses of opium, for this medicine itself lessens the appetite and often greatly interferes with the other functions of the body. The practitioner has to decide whether greater harm will result from want of sleep or the administration of opium. Patients exhibit great individual peculiarities in respect to the action of opium, and thus the above question can only be decided by a trial of the action of this medicine. With many patients this causes much excitement, sometimes of a pleasant, at other times of a disagreeable kind. With many it destroys the appetite or constipates the bowels; in such cases the opium may inflict even more harm than the want of sleep. On the other hand, some patients under its use fall into a refreshing sleep, and are in no other way affected by its administration. It should be the anxious endeavour of the physician to cure his patient with the smallest amount of medicine possible.—*Med. Times and Gaz.*, April 21, 1866.

*Hygienic Measures against Cholera*



October 8 quite convalescent, and eventually entirely recovered.—*Med. Times and Gazette*, Dec. 8, 1866.

International Conference on Cholera.—

"The great preventive scheme of the Conference on Cholera that met at Constantinople," remarked Dr. Jenner, in his inaugural address as President of the Epidemiological Society, "was strict quarantine, especially between India and Europe—a most vexatious, most costly, and most impracticable scheme." "Neither practicable nor rational," was the terse and forcible expression with which Dr. Farr ended the discussion and summed up his opinion of this scheme at the meeting of the Epidemiological Society on Monday last. In terms not less strong did Dr. Milroy and other members characterize the infeasibility of the recommendations of the Conference for the protection of Europe from future invasions of cholera. And it would appear from the clear and comprehensive account of the proceedings of the Conference submitted by Dr. E. Goodeve to the Society, and which formed the basis of the discussion, that the British Medical Commissioners in the main dissented from these recommendations.

The objections urged against the great scheme of quarantine suggested by the Conference for the purpose of raising a barrier against the transmission of cholera from India to Europe (resting these solely upon its inherent worth) are very cogent. Foremost is the question of expense. Dr. Jenner holds that, so far as this country is concerned, its hygienic condition might be so greatly improved, at a much less cost, as to prevent the spread of cholera, even were its zymotic element constantly among us. And he further urges, as giving additional weight to this consideration, that the improvement in our hygienic condition to such a degree would not only prevent the spread of cholera, but diminish the mortality from almost every other preventable disease. This argument, however, applies equally to every European country, and with scarcely less force to the delta of the Nile, and the sacred land of Mohammedanism—the Hedjaz. It may be extended also, almost unweakened, to the focus of epidemic cholera, British India. This has been clearly shown by the effect of recent sanitary measures there. The danger to the

public health arising from the Hindoo religious festivals—the chief hot-beds of cholera—may be obviated by a systematic sanitary regulation of the places where they are held and of the crowds of devotees which attend them. Conjeveram, the scene of a celebrated festival, and long a persistent centre of choleraic infection of the surrounding country from the ebb and flow of vast numbers of pilgrims, has, under the energetic measures of the Madras Presidency Sanitary Commission, been purified, and subjected to strict sanitary rule, with the happiest results. Two, if not three or more, festivals have already passed without an explosion of the dreaded epidemic. This fact, the importance of which, in its bearing upon Indian sanitation and the restriction of cholera, was urged in the discussion of Monday night last by Dr. A. P. Stewart, does not stand alone. Dr. E. Goodeve at the same time supplied a still more striking exemplification of the efficacy of hygienic measures in India. There are, he stated, in the Bombay Presidency ninety-four shrines to which pilgrimages are made. In the past year, for the first time, these shrines and the devotees frequenting them were subjected to sanitary control. The result was remarkable. At two only of the shrines did cholera appear, although the disease was far from being inactive among the native population of the Presidency.

Dr. Goodeve holds, and in this belief he is supported by his brother Commissioner at the Conference, Dr. E. Dickson, that the persistence of cholera in India is owing, not to any peculiarity of soil, but to the continued transmission of the disease under unhealthy conditions singularly favourable to such transmission, engendered by man, and admitting of remedy. He believes that this theory of the permanent repetition of the disease is most in accordance with the facts of its prevalence as observed at the present day; and that it offers less difficulty to acceptance and is more fruitful in practical consequences than the vague theories of spontaneous generation.—*Lancet*, Dec. 8th, 1866.

Cholera in Scotland.—In 1832, epidemic cholera broke out in Scotland towards the end of January, and then followed the law which seems to regulate its progress in all the warmer countries of the continent—viz., increased with the rise of temperature,



proved most fatal in the autumnal months, and died out in December. In its subsequent attacks, however, it followed in this country a different law—the law which seems to regulate the spread of fever and most of our epidemics—viz., it first manifested itself in the autumn, as the weather began to cool, increased with the fall of the temperature, and died out in spring on the advent of the warm weather. It is well to be aware of these facts, lest we commit the mistake of trusting that the cold weather will arrest its course, while we neglect to employ those sanitary means which science has proved materially check its ravages.—*Scottish Registrar-General's Report.*

*Cholera Statistics in Austria.*—The *Wiener Med. Presse* says that it results from authentic reports that the number of cholera cases which occurred in the Austrian Empire from its outbreak at the beginning of July to the middle of October amounted to, in round numbers, more than 200,000, nearly 100,000 proving fatal. These cases were distributed as follows in the various provinces: Lower Austria, 21,595, with 12,625 recoveries and 7971 deaths; Vienna, 7443, with 2493 recoveries and 3242 deaths; Bohemia, 37,597, with 17,716 recoveries and 17,570 deaths; Moravia, 67,192, with 33,735 recoveries and 27,624 deaths; Silesia, 2835, with 1421 recoveries and 1063 deaths; Bukowina, 8582, with 4116 recoveries and 3805 deaths; Lemberg, 19,809, with 7730 recoveries and 9737 deaths; Coast Districts, 1166, with 432 recoveries and 637 deaths; Carinthia, 1087, with 388 recoveries and 430 deaths; Hungary, 48,845, with 20,470 recoveries and 21,556 deaths. The discrepancies of the numbers are explained by the number of cases still under treatment when the report was made up.—*Med. Times and Gazette*, Dec. 8, 1866.

*"Strikes" and the Cholera.*—It would appear that the workmen in the iron trade have taken all their measures and are prepared to wage a desperate war with capital during the winter months. It is not for us to dilate upon the politico-economical aspects of the strike, but we may fairly draw attention to one fact of considerable import to a large number of our professional brethren.

Cholera has not yet left our shores. Ac-

cording to the most recent accounts it has assumed a very threatening appearance in numerous northern towns. It is not at all improbable that the districts where the men are on strike may have to endure the additional calamity of an outbreak of cholera. Are the leaders of the trades-unions prepared to invite the epidemic? They will argue that the men on strike will be supported by the unions as well as by their earnings, but has this ever been the case! We know by experience that strikes bring want in their wake, and that hunger and distress afford food to disease, especially to epidemics. When these calamities are upon them, we know also that the men will turn instinctively to our profession for aid, and our brethren will devotedly labour to alleviate the pain and distress around them. The sufferers will be unable to pay, and thus another item will be added to the huge debt of the people to the medical profession. Nevertheless, it is a hard thing that the doctor, who devotes all his energies to the emergency and often sacrifices his life to the calls of humanity, should be left unrequited—that, as too frequently happens, at his death he should leave his wife and family unprovided for. If the trades-unions support hundreds of men in idleness, they might as well devote part of their funds to the payment of their members' doctors' bills.

We do not suppose our suggestion will be adopted. The doctor is only appreciated at the moment his services are wanted. But we beg to ask the supporters of those strikes, which bring us so much misery, what would be the consequence if the medical men united in a similar manner and refused to attend any man on strike until they had received their fee?—*Med. Press and Circular*, Nov. 7, 1866.

#### FOREIGN INTELLIGENCE.

*Death from Chloroform.*—A death from chloroform occurred at Birkenhead on Thursday week last. The patient was a boy named Hughes, and the operation that was to be performed was lithotomy. The death took place previously to the performance of the operation, the boy ceasing simply to breathe, and the action of the heart ceasing almost at the same moment. The chloroform was administered with every care, and there



# PHILADELPHIA MEDICAL TIMES.

SATURDAY, OCTOBER 18, 1873.

## ORIGINAL COMMUNICATIONS.

### THE THIRD INTERNATIONAL MEDICAL CONGRESS.

HELD AT VIENNA, AUSTRIA. Aug. 73.

Reported by FREDERICK W. RUSSELL, M.D.

(Concluded from page 26.)

#### FOURTH SESSION.

THE fourth session of the Congress began at 9 A.M. of September 3, with Dr. GUNTHER, of Dresden, for President, and Dr. TOMASSICH and Dr. DRASCHE for Vice-Presidents, with Dr. OSER, Dr. WITLACIL, and Dr. DRASCHE, as a committee of reference. The question under discussion was, "The Subject of Quarantine, with Particular Reference to Cholera."

A little four-page sheet of suggestions and propositions was distributed by the reference committee, of which the following is a brief summary:

The cholera conference at Constantinople in 1866 had declared for the universal adoption of quarantine against cholera, because that incontestably offers a strong guard against the entrance of the plague, when conducted on a rational basis and in accord with the demands of science. Moreover, the present rules of quarantine are of less injury to commerce than the loss produced by a single invasion of the disease. Cholera must be fought at its place of origin before the process of extension begins. Regulations must be established upon principles which govern its transmissibility. Sanitary lines, though troublesome in a crowded population, can do much towards preventing the extension of the disease. As a basis of discussion, and in reply to certain questions, they advance the following points:

1. The essential influence of commerce in spreading the disease is undeniable.

2. Cholera is a preventable disease.

3. Quarantine regulations theoretically offer a protection against the spread of cholera.

4. Practically, however, the protective influence is considerably reduced, or quite destroyed:

(a.) Because a complete prevention is impossible.

(b.) Because there is ample time for the spreading of cholera in all directions between the first cases and the establishment of official control.

(c.) Because the time of incubation of the disease is longer than the appointed time for quarantine, and also because a person sick with the premonitory diarrhoea can spread cholera.

(d.) Because the escape from quarantine of a single case is enough to incite an intense epidemic.

(e.) Because irregular licenses, and false statements of captains and the public, are not to be avoided.

(f.) Because in countries with established inland commerce the protection of quarantine is one-sided, and therefore useless.

(g.) Because, as inland trade increases, and the

net-work of railroads brings us nearer to the home of cholera, the power of quarantine must steadily decrease.

(h.) Because the hygienic conditions of the quarantine grounds not seldom tend as much to increase the pestilence as to check it.

5. The preceding facts give no clear demonstration of the sure advantage of quarantine. If, however, one country is preserved from the disease in this way, there are others which a much stronger quarantine does not save from fearful epidemics, and others which remain free in spite of notorious relaxation of quarantine.

6. From the great hinderance of quarantine to the interests of commerce, it is a question of the utmost moment to come to a clear decision as to its value. To this end an international commission is to be convened, to discuss these points, to fix upon the places for a sharp oversight, to report on the onward march of cholera, and to attend to the other causes of the spread of the disease.

7. Upon the grounds of these conclusions this commission is to frame an international law, from which no government, without permission of the others, can withdraw.

8. The decisions of the conference of 1866 are concise material for this purpose.

9. The isolation-laws of countries have to cease, at least for Europe.

10. Hospitals are to be constructed in accordance with hygienic laws.

11. The hygiene of trade by land and water is to receive particular attention at the hands of governments.

Dr. GUNTHER, after conveying his thanks for the honor conferred, expressed his strong hopes that through united effort a long step on a difficult road might be taken. The question had been restricted to cholera quarantine because the special discussion would be of great value as regards the general subject.

Dr. OSER, one of the referees, then read a long article, of which the following is a summary:

This question, of such intense interest to medical men, has a vast literature of hypothesis, plans for prevention and cure, which cannot stand the criticism of scientific investigation.

As regards the most important question, the influence of commerce, men say that further discussion is unnecessary, and that quarantine and restrictive measures seem useless. Most writers agree as to the vast influence of trade in spreading cholera, only Dr. Bryden, on the ground of Indian observations, coming to different conclusions. The monsoon theory must, among other things, explain how the great epidemic of 1818 travelled from Madras down to Bombay against a prevailing monsoon, why it spread over the whole country without regard to the direction of the winds, and, still further, why in 1865 it spread in every direction from Alexandria into Europe.

Cholera only travels along lines of trade, always passing inwardly from the harbors; and this is one of the best-established facts in our knowledge of the



disease. Since it is not found native outside of India, complete abolition of commerce would be absolute protection against cholera. But trade is not and cannot be suppressed: therefore quarantine cannot be universally protective. Its duration is too short, so that, after passing through quarantine and departing, cholera often breaks out among the passengers. It is even more difficult to restrict in thickly populated states with much internal commerce. Cholera has a preference for the land-routes. A ship offers no favorable ground for the development of a cholera, and ship-epidemics are very rare. Again, quarantine stations are like prisons, which every traveller regards with terror. The result of quarantine, stated by its warmest defendant, amounts to but very little. Witness Greece and America. Though the fact exists that where quarantine is in force cholera is diminished, the speaker asked if there was any proof of a causal relation of both forces. England has suffered less than almost any other country, yet she has never carried out a rigorous quarantine, in the idea that through it alone protection could be obtained. Countries with limited trade by the sea may be able to protect themselves through a strenuous quarantine, but its universal protective influence cannot be deduced from the facts yet presented. We know that commerce sustains an enormous damage, amounting to millions yearly. The Constantinople conference declares it much less than industry and trade suffer through an epidemic of cholera. An exchange of a cholera epidemic for a commercial trouble would be satisfactory to all, but now we put up with both.

The speaker advises, then, an international commission of tried and trusted experts, who shall, without fear or favor, make the most rigid and minute investigations into these questions,—the lines of travel of cholera,—and accurate statistics. The abolition of quarantine without any substitute cannot be expected. Again, what good does it do between two sea-ports where land-communication is carried on? Especial attention must be paid to the hygiene of trade by land and sea. Let us find no fault with the Mecca pilgrims, when we have our Lourdes and Kiew. A vigorous official supervision of all means of transportation, attention to the hygiene of sea-ports and places of entrance of cholera over railroads, are yet wanting. When first the help of all these regulations is obtained, when hygiene lends its aid in the shape of good drainage and good water-supply, and when the state finds that the practical meaning of medicine lies in hygiene, then epidemic diseases will be shut into narrow quarters, and a great obstacle will be presented to their onward progress.

Dr. SCHNEIDER, of Java, considered commerce the etiological force, to which he attributed the often slow progress of cholera and the time occupied in finding its way to America.

Dr. EULENBERG, of Berlin, having watched the march of an epidemic, was opposed to quarantine.

HASSAN EFFENDI said that cholera, commonly epidemic, was endemic on the banks of the Ganges. Travellers from India bring with them the implanted virus, which, under the proper circumstances, develops. Only thus could he explain

the fact of the advent of cholera into Europe since 1868, while no case has occurred in Egypt; further, the epidemic of 1865 was coincident with the arrival of pilgrims from India.

Dr. CARMINHOA, of Brazil, was opposed to quarantine, because it could not prevent the introduction of the disease.

Dr. WITLACIL thought the transmission of cholera was accepted by most physicians.

Dr. LUDWIG GRÖSZ, of Buda-Pesth, declared for the abolition of quarantine, except in the case of the cattle-murrain.

Dr. GIACICH, of Fiume, favored quarantine on the same grounds as compulsory vaccination.

Dr. GREGORIC, of Belgrade, declared himself opposed to quarantine, because it was impossible to carry it out effectually, and because he believed in *the spontaneous development of this species of malarial disease*, and could bring forward cases of its occurrence in completely isolated districts.

#### FIFTH SESSION.

The fifth session was held September 3, at four o'clock P.M.

Dr. SCHNEIDER was opposed to land-quarantine, and considered the wind a factor in the diffusion of cholera.

Dr. WITLACIL said that a majority seemed opposed to land-quarantine. Two have favored it. Theoretically it is quite right, when one reasons that, as cholera is a transmissible disease, it is well to hinder that transmission and isolate every place where it appears. The facts are that quarantine does not prevent the spread of the disease, is not suited to European circumstances, is too disadvantageous to commerce, and should be abolished. The conditions of Egypt are not like our own. We must deal with our own conditions. Land-quarantine is an idea which it is absolutely impossible to carry out.

The President, Dr. GUNTHER, gave the expressed opinions of the cholera commission of Germany: a complete seclusion on land is impossible, and therefore restrictive regulations are without success.

Dr. HUMANN thought that if international regulations for quarantine on the sea were to be established, a glance at facts already gathered by experience of various countries would be of use. Norway is a country where only sea-quarantine can come into application, but where also, from the circumstances of a wide-spread commerce, a rich experience can be obtained with regard to quarantine.

In the years 1865 and 1867 there were no cases of cholera in Norway. In 1866 there were only 80 cases, of which 50 died. In this year, when cholera was abroad in Europe, no less than 3128 ships, from places where cholera was raging, came to Norway, of which 28 brought persons dead or sick with genuine cholera, and 25 brought suspected cases of cholera. The rules were—medical inspection of every ship which came from a cholera locality, and isolation of completely developed, as well as of suspected, cases.

The ships were brought to a certain locality and



purified, and the passengers at the proper time sent on shore, or the sick kept isolated on board until the cases were ended. Not one ship imported the disease on shore. The cases which did occur were imported. A ship from a non-suspected port having on board a case of cholera-diarrhoea, the disease extended to others of the crew, and to the ships near at hand in the harbor. Another source was a ship not thoroughly inspected. The third set of cases were brought into the mainland from a near district in Sweden; but no wide diffusion of cholera occurred from any. The cases were isolated, buildings thoroughly disinfected, and the system proved to be a protection against the disease.

Dr. GIACICH, of Fiume, declared that a bad system of sea-quarantine would get as many enemies as the land-system. It originated with Maria Theresa, and lasted forty days for each ship, whence the name. We do not know the incubation-time of cholera. Hence we must consider the length of time the voyage has continued, whether the ship is heavy, and what the cargo, whence she comes, and how many men she has on board,—since with a great cargo and numerous passengers the spreading of the disease is to be feared. The speaker believed that cholera diffused itself through the air, as well as from persons and clothing.

Prof. CROCQ, of Brussels, was an opponent of quarantine, because it is impossible to carry it out practically, and also because cholera has raged no more severely where quarantine was carelessly or not at all carried out than in countries where it was rigorously executed. It should be applied only to ships with the disease coming to ports where it does not exist.

Dr. SCHERZER, on the grounds of a very large private and official experience, considered quarantine not only insufficient, but also inhuman,—indeed, horrible. As the Chinese wall fails to keep out the contagion of European civilization, so will a complete net-work of lazarettos fail to keep cholera out of the country. By the great extension of the means of trade, quarantine is made an absurdity. A traveller embarking at Trieste for the Orient must delay fifteen days in Italy, Syria eleven days, and Constantinople eleven days more, in quarantine. In conclusion, the speaker felt obliged to demand the removal of quarantine in its present form.

Prof. CASTIGLIONE, of Rome, said that the idea that cholera attacked only filthy localities and people was not correct, for in 1854 over 5000 people were carried off in Brescia, the cleanest city of Lombardy, while the wretched Jews' Quarter of Rome escaped. The speaker was in favor of sea-quarantine, not as affording absolute protection, but because in certain cases it could be useful.

Dr. WITLACIL, in a review of the debate, remarked that all had spoken against sea-quarantine as at present conducted, though all believed in its application to a ship with the disease coming to a country at that time free.

The results of the votes then taken were not given until Saturday. The following resolutions were passed by large majorities:

1. Land- and sea-quarantine is to be abolished.

2. Sea-quarantine is to be temporarily continued, however.

3. An international commission for the study of the agencies which spread cholera, and for eliminating them from commerce, as well as for finding rules which shall give greater protection than the present ones, is to be appointed.

#### SIXTH SESSION.

The sixth session was held on Thursday, September 4. President, Dr. EULENBERG, of Berlin, assisted by Dr. HAMM and Dr. INNHAUSER, with Prof. BOHM as referee. The question was, "The Sanitary Management of a City, with Reference to Drainage and Water-supply."

Dr. BOHM gave the conclusions of the referees, as follows:

1. The purification and improvement of the city must be pointed out as an unavoidable demand from a sanitary point of view, and the study of the question is of the utmost importance.

2. For the conveyance of water to and from the houses, as well as channels for the surplus water, canalization is necessary in every city, and must be established in accord with hygienic demands.

3. The refuse of the inhabitants is to be conveyed away through rational means, in accordance with hygienic laws and the interests of the people.

4. In every case the circumstances of the city, the water-supply, the cost of engineering and management, the capability of paying, etc., must be all regarded.

5. As a rule, a good system in accord with hygienic demands can be made in a cheap and workable way.

6. The carrying off at least partially of fecal material, and of the greater part of the urine, is necessary.

7. Cities ought to engage in the discussion of these questions concerning the purification of the state and city, with the assistance of experts.

The discussion of these points briefly epitomized above was participated in by a number of gentlemen interested in the subject. The previous questions of the Congress seemed of so much consequence that I reported them more fully. Of this I can only say that Dr. ARADI, Prof. WARLOMONT, Dr. FOLWARCZNY, Dr. GRUBER, Dr. INNHAUSER, and others spoke, and in the afternoon session (No. 7 of the Congress) Dr. WITLACIL, Dr. EIGENBRODT, Major NIGRAS, and others.

These points mentioned above were officially adopted by the Congress by a vote of 156 out of 181.

#### EIGHTH SESSION.

The eighth session was held on Friday, September 5. President, Dr. ABDULLAH BEY, assisted by Dr. CARMINHOA and Dr. WITLACIL, with Dr. JOHANN SCHNITZLER for referee. The question was, "The general subject of Quarantine."

Dr. SCHNITZLER proposed—(1) That the present method of quarantine is untenable on many grounds, especially because it cannot be carried out sufficiently to protect against all epidemic



diseases, and is in daily conflict with commerce. (2) A series of quarantine rules must be provisionally retained. (3) The plan for the moment should be the calling of a permanent commission for the study of epidemic diseases, having in view the eventual establishment of international regulations.

Prof. CARMINHOA proposed—(1) International measures for the purification of the Ganges, the Nile, the Danube, and the American rivers emptying into the Gulf of Mexico. (2) Purification of places according to hygienic laws. (3) Quarantine for such ships only as come from suspected ports, or have disease on board which has broken out within fifteen days from the departure on the voyage.

Dr. WALLNER, of Trieste, Dr. BENEDICT, Dr. AUSPITZ, Dr. SPAETH, and Dr. KAPOSI, also spoke, and the Congress finally declared itself as follows:

Quarantine is to be restricted to the time necessary for the examination and disinfection of ships, crews, and passengers. If there be no sickness on board after disinfection, a free passage to be allowed. If sick persons be found, these are to be isolated, and the ship disinfected, with free passage afterwards.

Against yellow fever and the plague the previous rules remain in force.

The question pressing for solution now is how to change the existing quarantine laws in accordance with the points of view previously set forth.

A permanent commission on contagious diseases is to be appointed for a thorough study of the question in all its bearings, which can bring forward definite grounds for a universal sanitary code of laws.

#### NINTH SESSION.

The ninth session was held on Friday, September 5. President, Prof. RATTI, Rome; Vice-Presidents, Dr. CAPSA and Prof. BERNATZIK; Prof. BERNATZIK, Prof. SCHROFF, sen., and Dr. SCHROFF, jun., were the referees. The subject was, "The Establishment of an International Pharmacopœia."

On this point the committee, among other questions, asked, Is it possible to take one of the existing pharmacopœias for universal use? If this be declared impossible, can it be expected that a pharmacopœia written expressly for international use can serve the purposes of the various countries satisfactorily, as regards the choice, composition, and peculiarities of the remedies? And again, Can the object which is arrived at in the establishment of an international pharmacopœia be obtained in no other way, and what regulations must be established for the purpose?

The resolutions were declared on Saturday, and read as follows:

1. The Congress recognizes the need of an international pharmacopœia. This must contain the most essential and best-known remedies, the most necessary excipients and corrigents, with a precise description of their qualities and method of preparation; the Latin language to be used in the text, and in the relations of the components the decimal system.

2. The Congress wishes that for the future the metrical system be used in prescribing.

3. The Congress intrusts to the president of the Fourth Congress the organization of an international commission for the revision of the pharmacopœia.

#### TENTH SESSION.

The tenth session was held on September 5, at four o'clock P.M. President, Dr. RECLAM, of Leipsic, assisted by Dr. HUBNER, of St. Petersburg, and Dr. SCHNELLER. Referees, Prof. BENEDICT and Dr. WILLIAM SCHLESINGER. The question was, "The Social Standing of Physicians."

The questions submitted were as follows:

1. Is the practice of medicine to be free, and in what is this freedom to consist?
2. Is this freedom worth wishing for, and under what regulations is it to be commended?
3. Are there means for checking quackery, and, if so, what?
4. Are there cases where any physician can be called upon to give medical aid?
5. Is the official establishment of a medical tax advisable?
6. How can medical interest be best preserved?

Dr. WILLIAM SCHLESINGER made a long speech on the question, followed by Prof. BENEDICT, Dr. ABDULLAH BEY, Prof. CROCQ, Dr. MARCOWIC, of Bucharest, Dr. MEDOVICH, of Belgrade, and others. The Congress declared itself in favor of the first point, but only on condition of similar antecedent and professional education and similar evidence in proof of authority to practise, and emphatically opposed No. 4.

#### FINAL SESSION.

The final session occurred on Saturday, with Prof. ROKITANSKY in the chair. Speeches were made by Prof. MAZZON, of Kiew, Dr. VAN DER LOO, and Major NIGRAS, who had spoken acceptably before, and made an earnest plea for Philadelphia as the next place of meeting.

Prof. ROKITANSKY gave a short review of the progress of the discussions, and declared the sessions closed.

The Fourth Congress will assemble at Brussels. During the sittings of the Congress a small number of experts in mental and nervous diseases have held daily sessions. Such men as Prof. MEYNERT and Prof. LEIDESDORF, of Vienna, Dr. NOSTER, of Marburg, Dr. WISLOCKY, and others, have met and discussed various points. The question, How can the insane be restored to sanity in the quickest way? was discussed at the first meetings. To Prof. MEYNERT was referred the question, How can we attain a natural method of treatment for mental debility?

A number of monographs and articles on various subjects were distributed among the delegates, or handed to the secretary for future publication.

In connection with the Congress there have been gatherings at the hotels in the evening, various receptions, a banquet at the "Kur-Saal" on Sunday evening, excursions to the new water-works of the city, and a trip by rail over the wonderful Söm-

Medical Inspection to be recommended in preference to cholera

On Quarantine against Cholera

On International Congress at Vienna, 1873.



read so harrowing an account, some time back, in South America.

As I write, the papers have account of another steamer, the *Virginia*, with over 1000 passengers, attacked in the same latitude and longitude. A striking confirmation of the view I have advanced.

But it will be said or asked, would you abolish *all* quarantine—abandon all *inspection of ships* whatever? No; I would not. But I would abandon altogether the whole *theory* of quarantine, as against cholera most particularly.

Ships should be inspected on approaching ports, because they may have unsanitary conditions intensified in them, on a scale sufficiently large to be important. This is, or should be, a part of sanitary police. Nor should it (and here is a great point of difference) include *any* restriction of *persons*; at the most, longer than enough for cleansing of the body and of the clothing, and purification of merchandise, by fresh air, and possibly by some disinfecting process in certain cases.

I insist that SANITARY POLICE includes the sum total of available measures for the prevention of cholera in any place. \*

On this ground, the measures required are obvious, and familiar. The thorough and frequent cleansing of all streets, alleys, courts, wharves, and vessels, private and public buildings, and empty lots; the abatement of all nuisances; daily

\* Effect of Sanitary Police in reducing mortality in Phila., in 1866, 300 below 1865, & 900 deaths from Cholera.



removal of offal; efficient sewerage; and *conservancy*, *i.e.* the cleansing, ventilation, and disinfection of cess-pools and water-closets. Among all signs of danger of the location of cholera, none is more significant than the *privy odor*. Let it be everywhere annihilated. Lime, charcoal, dry earth, chloride of lime, Labarraque's chloride of soda, liquid coal tar, chloride of zinc, and sulphate of iron are about the most available of disinfectants.

The fresh white-washing of cellars is useful; thorough ventilation and drying of them and of all parts of habitations, still more so. Chloride of lime may be placed, in a saucer, in any suspected room or other locality in a house. The same, in the solid form, or solution of green vitriol, may be thrown daily into a foul privy; and, during cholera time, especially in the case of patients with the disease, every water-closet and vessel used may and should be disinfected constantly, by a dilute solution of chloride of zinc, chloride of soda, permanganate of potassa, or carbolic acid. The immediate removal of all discharges from the sick-room, their disinfection and transportation to the safest possible place of elimination, ought to be imperatively maintained. All foul clothing must be promptly washed, or, if very bad, disinfected or burned.

These precautions have been proved to be capable of essentially limiting and mitigating the prevalence of epidemics.



# MEMORANDUM ON CHOLERA.

[Specific Sanitary Information for Public Use.]

June, 1873.

THE AMERICAN PUBLIC HEALTH ASSOCIATION, by its Executive Committee, submits the following *Memorandum* respecting the most available means for arresting and preventing the fatal prevalence of malignant Cholera in this country :

The presence of this disease at several places in the Mississippi Valley is acknowledged. Its progress from New Orleans to Memphis and Nashville seems to have been rapid, and is significant of its onward tendency. That its propagation is greatly aided by local causes and the neglect of sanitary duties, is as true now as in the former visitations.

To combat and arrest the progress, and prevent the epidemic prevalence of this scourge of sanitary negligence it is necessary that the inhabitants of every city and town should promptly resort to the most effectual PURIFICATION, and the best known means of DISINFECTION, and that this sanitary cleansing and preparation should be at once and very thoroughly carried into effect,—*before any cases of Cholera occur*,—and that in the *presence* of the disease these sanitary duties should be enforced in every household, and throughout the entire district. Experience has proved that the best way to prevent both pestilence and panic is to know and prepare for the danger ! It is the only way to deal successfully with Cholera.

## SANITARY CLEANSING.

*The local conditions* that chiefly promote the outbreaks and propagation of Cholera—

- (1.) Neglected Privies ;
- (2.) Filth-sodden Grounds ;
- (3.) Foul Cellars, and filthy or badly-drained surroundings of Dwellings ;
- (4.) Foul and obstructed House drains ;
- (5.) Decaying and Putrescent Materials, whether Animal or Vegetable ;
- (6.) Unventilated, damp, and uncleansed Dwellings and Apartments.

These localizing causes of Cholera should be promptly and very thoroughly removed before a case of the disease appears in the town or district ; and if any sources of putrescence, or of excessive moisture remain, these should be controlled by the proper cleansing, drying, and disinfection.



Thorough scavenging and surface drainage, with the application, at the same time, of quick-lime and coal-tar or crude carbolic acid ; whitewashing with fresh quick-lime ; the cleansing and thorough drying and ventilation of cellars, basements, chambers, and closets ; and daily care to cleanse, flush, ventilate, and purify the sources of defilement about all inhabited premises, will afford almost complete protection if suitable care is taken of

### PERSONAL HEALTH :—

The security of Personal Health requires—*Pure Drinking-Water, Fresh and Substantial Food, Temperance, and the Needed Rest and Bathing of the Body.*

### DISINFECTION AND DISINFECTANTS.

The principles relating to Disinfection as a means of destroying the propagating or infectious cause of Cholera, and arresting putrefaction, are readily understood and may be so explained to any family that the household may insure its own immunity against the introduction and spread of the disease. For popular use we append a brief statement of these principles at the end of this circular ; and we respectfully recommend that the statement, and the following schedule of rules and methods, be given to the Press, and to all Principals of Schools, Superintendents of places of Public Resort, R. R. Depots, Ferries, Hotels, and Public Institutions ; and to the Masters of Ships and Steamboats ; and the Conductors of Passenger trains, throughout this Continent ; believing, as we do, that, by the timely and continued application of these measures, the prevalence of Cholera may be prevented : But let the fact be remembered, that there can be no substitutes for thorough cleansing and fresh air.

### RULES AND METHODS OF DISINFECTION.

*For Privies, Water-Closets, Drains and Sewers.*—8 or 10 lbs. of Sulphate of Iron (copperas) dissolved in 5 or 6 gallons of water, with half a pint of crude Carbolic Acid added to the solution and briskly stirred, makes the cheapest and best Disinfecting Fluid for common use. It can be procured in every town and by any family, and if the Carbolic Acid is not at hand, the solution of copperas may be used without it.

*To prevent privies and water-closets from becoming infected or offensive :—*pour a pint of this strong solution into every water-closet pan or privy-seat once or twice a day.

*To disinfect masses of filth, privy-vaults, sewers and drains :* gradually pour in this solution until it reaches and disinfects all the foul material.

*For the chamber-vessels used by the sick, and for the disinfection of ground upon which any excremental matter has been cast away, use the solution of Copperas and Carbolic Acid ; and, for disinfecting extensive masses or surfaces of pulrescent materials, and for drains, sewers and ditches, this Disin-*



fecting Fluid may be used, or the "dead oil" ("heavy oil") of coal-tar, or coal-tar itself: coal-tar may be used as a paint upon the walls of cellars, stables, and open drains.

*Other Disinfectants*,—such as the solutions of Sesquichloride of Iron, or of Chloride of Zinc, are effectual in Privies and Drains, and upon foul surfaces and offensive materials. These metallic chlorides, combined with a twentieth part of carbolic acid, make one of the most valuable disinfectants.

*Quick-lime* is useful as an absorbent and dryer upon foul walls and in damp places: and *whitewashing* with it should be practised in common tenements, factories, basements, closets, and garrets.

To disinfect the clothing or bedding defiled in any manner by excremental matters from the sick, throw them into a solution made as follows: 1 lb. of Sulphate of Zinc to 6 or 8 gallons of water, to which add 2 or 3 ounces of *pure* and strong Carbolic Acid—such articles to remain therein at least half an hour; then immediately place them in boiling water, and continue boiling. If the Acid is not at hand, then use the solution of Zinc in water. The same Disinfecting solution is excellent for bed-pans and chamber-vessels, and for soiled floors or defiled surfaces.

Apartments, bedding and upholstery that have been used by the sick with Cholera or Diarrhœa, should be thoroughly cleansed and disinfected.

#### PRINCIPLES AND DUTIES TO BE OBSERVED:

1. That thorough cleanliness, domestic and civic, and an abundant supply of *pure water* are essential means of preventing Cholera in any household when the disease is near.

2. That general cleansing, scavenging and disinfection should be attended to in every city and town before Cholera makes its appearance; and that wherever it does appear, that house and the exposed premises should be kept constantly disinfected.

3. That, whatever differences of opinion there may be respecting the epidemic phenomena of different periods, the paramount importance of thorough cleanliness and disinfection is to be kept in mind: Respecting the mode of propagation of Cholera, all are agreed that foul air, crowded and unventilated premises, and especially the fermenting changes and emanations from human excrement, are among the most active agents in the spread of this disease. It is also universally agreed that another active cause of the disease is the use of water that has been contaminated with the leakage or soakage from privy vaults, cess-pools, and other deposits of excremental filth: Much evidence has been presented, also, in favor of the opinion that the discharges from the stomach and bowels of persons who have cholera, or even the painless diarrhœa that precedes cholera, have the same specific effect in propagating the disease, when favored by surrounding



circumstances of filth or foul air and high temperature. In view of such facts, the Committee would most respectfully recommend and urge that the greatest care be taken to disinfect and remove all deposits of human excrement in privy vaults, and to keep all such places, all filthy grounds, ditches, drains, house-sewers and water-closets, thoroughly disinfected: And in all cases of cholera, or of choleraic diarrhoea, it is earnestly recommended that the discharges from the stomach and bowels shall be carefully disinfected with the carbolic acid and iron disinfectants before being cast away.

4. Cleansing and purity, skilful disinfection, temperate habits, and wholesome diet with pure water and fresh air, are the trusted and sure means of health and security in all places and for all classes of people when exposed to the causes of Cholera. The watchword against this destructive enemy should be,—Cleanse, *Cleanse*, CLEANSE!—Remove the local causes that favor the propagation of Cholera, and wherever it appears, let its germs be quickly stamped out by powerful disinfectants, and special cleansing.

From being the most feared and destructive pestilence, Cholera has become entirely submissive to *sanitary measures of prevention*, and can now be controlled with such certainty and completeness as to prevent its ravages as an epidemic. Believing, therefore, that the people of the United States will wisely apply the suggestions which are given in this *memorandum*, the undersigned Committee presents them for the purpose of hastening and making sure the most extensive, thorough, and speedy control of this Destroyer.\*

STEPHEN SMITH, M.D. (*New York.*)  
 EDWIN M. SNOW, M.D. (*Rhode Island.*)  
 C. B. WHITE, M.D. (*Louisiana.*)  
 JOHN H. RAUCH, M.D. (*Illinois.*)  
 WM. CLENDENIN, M.D. (*Ohio.*)  
 CHRISTOPHER C. COX, M.D. (*District of Columbia.*)  
 MOREAU MORRIS, M.D. (*New York.*)  
 JOHN M. WOODWORTH, M.D. (*Supt. U. S. Marine Hospital.*)  
 FRANCIS BACON, M.D. (*Connecticut.*)  
 HENRY HARTSHORNE, M.D. (*Pennsylvania.*)  
 ELISHA HARRIS, M.D. *Secretary, (301 Mott Street, New York.)*

Executive Committee of the American Public Health Association.

NEW YORK, *June 20th, 1873.*

\* All who receive this Circular are requested to communicate information concerning observations upon Cholera, and other Epidemics that prevail at the same time. Local authorities or other citizens can issue, for popular use, if they desire, a card of information made up from this *Memorandum*, omitting the first three and last paragraphs.

NOTE, to *Second Edition*,—July 12th.—Events in the spread and sanitary control of the disease in the Mississippi Valley fully warrant the most vigilant and thorough enforcement of the duties recommended in this *Memorandum*.



~~working in Copper mines in England~~  
~~for preventing cholera,~~

Dr. Curten, 1866, at Philadelphia Hospital  
when cholera was at rate of 4 cases daily  
gave 10 drops diluted  $\text{SO}_3$  twice daily;  
after trying it, 1 case refused milk who  
would not take it; & after sugar  
ran out, at end of a week, it with  
2 days, 2 cases; and of epidemic.  
Copper workers - in France & England, reports.







## PERSONAL PREVENTION.

One principle will suffice here: *to keep the system at par*; neither above its level of excitement, nor below that of its due strength.

For this, regularity of life is required, in work, diet, mental movements, and all indulgences. The popular errors most common are, one, to suppose that living on rice or rice-water, avoiding fruits or vegetables, etc., will be preventive; another, to think constant alcoholic stimulation beneficial for that end. *Both are certainly wrong.*

In 1832 and 1849, the late Dr. Joseph Harts-horne, my father, then in very large practice, allowed in his family all its usual variety of food: boiled corn, peaches, watermelons, cantelopes, etc., everything but cucumbers; and no cholera resulted from the liberty. My own subsequent experience justifies the practice. Of course care is always needed as to *quality* and *quantity*.

Of all those most likely to die when attacked by this disease, the drunkard stands first, according to all records. Nor is he one whit less apt to be attacked than others. Temperance, *in all things*, is essential to safety during epidemics of every kind.

Dr Bowditch of Nashua  
per Contro - 1873



## TREATMENT.

To *discuss* all the modes of management proposed for cholera; would make a volume larger than this is meant to be. I shall merely *enumerate* those which have attracted the most attention; and then give my view as to what is so well sustained as to be worthy of further trial and some confidence.

1. **Bleeding.**—This was largely practiced in India, in 1818–1825, by Corbyn, Scot, Annesley, and others. Without entering upon any argument about it, I will simply say, that (as Dr. Brigham's quotations show) as many positive facts have been asserted on behalf of the success of blood-letting as of any other remedy in cholera. My father bled in several cases in 1832, and had confidence in the treatment, as “the most effectually *antispasmodic*.” In 1849 I bled in one case (a boy of twelve years of age), in incipient collapse. The blood at first was thick and black as tar; in a few minutes it flowed more freely, and the patient *recovered*. I confess that the only thing which makes it unlikely that I will ever try or advise the repetition of this practice is, the want of courage to stem the overwhelming tide of professional and popular opposition now existing against it. In this timidity I may be wrong; if



3. *Chloride of Zinc, Proto-Chloride of Iron, Sulphate of Iron, or Nitrate of Lead.*—Make a saturated solution of the salt, and use such solutions diluted in eight or ten times the quantity of water.

4. *Chlorine Gas.*—When required more copiously than it would ordinarily be given off by the Chloride of lime or Labarraque's solution, the following ready methods may be resorted to for generating it.

*Chlorine water* may be readily prepared by mixing two table-spoonsful of common salt in two teaspoonsful of red lead in a quart of water, and add half a wine-glassful of sulphuric acid. It will give off gas as needed.

It must be borne in mind that chlorine is irritating to the lungs. It is believed not to disinfect and destroy the Cholera poison itself, but it arrests putrefaction and destroys many noxious gases.

5. *Coal-Tar.*—To be used in sinks, sewers, privies, and bed-pans, by directly applying it, and allowing it to be washed away. It serves an excellent purpose when painted frequently upon the interior walls or sides of stables, prison cells, privy vaults, etc. Carbonic acid is derived from coal-tar, and is more convenient for use in the sick room. Dilute it.

6. *Permanganate of Potassa.*—To be used as an immediate and most effective disinfectant. Dilute the saturated solution of this salt in from 10 to 500 parts of water, according to the requirements for the occasion. It is the neatest and most effectual of all the disinfecting fluids, and can be used in less quantities than most others. A few drops of the solution will instantly disinfect a quart of drinking water. May be procured of the druggists

7. *Heat.*—Boiling water or steam to be employed in cleansing as the most certain means of disinfecting contaminated clothing, etc.

8. *Charcoal.*—As a disinfectant or deodorant for extensive use in masses of putrescent material, and for local purification, fresh charcoal is of acknowledged value. The British Sanitary Commission in the Crimea, ordered whole ship-loads of peat charcoal, which they used in the progress of their work of purification in the hospitals, barracks and camps in the East. A Report of that Commission states, that "perhaps the best deodorizing compound was one used by the inspectors in all their works. It consisted of *one part of peat charcoal, one part of quicklime, and four parts of sand or gravel.*" But it may properly be stated in this Report, that charcoal does not seem to disinfect or destroy the Cholera poison. The ships which were employed in transporting charcoal from Constantinople to the Crimea were ravaged by Cholera.



The following advice concerning disinfection has recently been promulgated by order of the Privy Council of the British Government:—

“In the ordinary emptying of privies or cesspools, use may be made of perchloride of iron, or chloride of zinc, or of sulphate of iron, (copperas.) But where disease is present, it is best to use chloride of lime. Where it is desirable to disinfect, before throwing away the evacuations from the bowels of persons suffering from certain diseases, the disinfectant should be put into the night-stool or bed-pan when about to be used by the patient.

“Heaps of manure or other filth, if it be impossible or inexpedient to remove them, should be covered to the depth of two or three inches with a layer of freshly burnt vegetable charcoal in powder. Freshly burnt lime may be used in the same way, but is less effectual than charcoal. If neither charcoal nor lime be at hand, the filth should be covered with a layer some inches thick of clean dry earth.

“Earth near dwellings, if it has become offensive or foul by the soakage of decaying animal or vegetable matter, should be treated on the same plan.

“Drains and ditches are best treated with chloride of lime, or with chloride of iron.

“Linen and wearing apparel, requiring to be disinfected, should without delay be set to soak in water, containing per gallon, about an ounce of chloride of lime. Or the articles in question may be plunged at once into boiling water, and afterwards when at wash be actually boiled in the washing water.

“Woolens, bedding, or clothing which cannot be washed, may be disinfected by exposure for two or more hours in chambers constructed for the purpose to a temperature of 210 to 250 degrees Fahrenheit.

“For the disinfection of interiors of houses, the ceilings and walls should be washed with quicklime water. The wood-work should be well cleansed with soap and water, and subsequently washed with a solution of chloride of lime, about two ounces to the gallon.”—*Council of Hygiène and Public Health, N. Y.*

#### Personal Duties.

Observe strict cleanliness in your person and clothing. Bathe daily if you have the convenience. If not, wash freely with cold water every day.



Change your under garments daily, or, as frequently as your circumstances will admit.

Be regular in your habits of life, in your morals, meals, exercise and sleep.

Be careful to dress comfortably for the season, avoid the night air as much as possible, and when thus exposed, put on an extra garment, and do not go into the night air when in a state of perspiration.

Be careful to avoid the use of alcoholic drinks. Do not suppose that their use will prevent the occurrence of Cholera. On the other hand, those who indulge in the custom, are always fair subjects for the disease, and when it attacks the intemperate it is particularly fatal.

Live temperately, live regularly, avoid all excesses in eating crude, raw and indigestible food, especially cabbage, salad, cucumbers, and unripe fruits.

Partake of well cooked beef and mutton; rice well boiled, and avoid pastry and laxative fruit.

Take your meals at regular seasons, neither abstaining too long at a time, nor indulging too frequently. An overloaded stomach is as much to be dreaded as an empty one.

Avoid bodily fatigue and mental exhaustion. When the equilibrium of the system is disturbed from either cause,—that moment you invite an attack of Cholera.

Lead a calm and quiet life. Let all exciting causes be avoided. If you depress or impair the vital forces, it is prejudicial to health. By excitement or violent exercise, you increase the susceptibility of the system to an attack of Cholera. Do not become alarmed by fear or apprehension of taking Cholera. REMEMBER CHOLERA IS NOT CONTAGIOUS, therefore, any undue solicitude is uncalled for.

That there may be no delay in the hour of danger provide yourselves with the following articles, and have them convenient in the event that any member of your family be attacked with the disease.

Laudanum	-	-	-	-	1 ounce
Tincture of Capsicum	-	-	-	-	1 “
Spirits of Camphor	-	-	-	-	1 “
Solution of Sulphate of Morphia	-	-	-	-	2 ounces
Flour of Mustard	-	-	-	-	4 “



### Treatment.

When you learn that Cholera is in the city or even at all times during this season, give particular attention to the slightest deviation of your bowels from their natural condition.

Looseness of the bowels is the principal premonitory symptom, and may vary from one to two, three, five or more evacuations daily, with or without pain, and sometimes neither change in color or in smell. On no account allow this change to pass without strict attention, as at this period, ninety-nine cases out of every hundred may be cured—neglected diarrhœa, which is *cholerine*, may attack with fearful violence, and oftentimes hurried death—therefore, on the earliest intimation of looseness of the bowels, and frequency of stools—

1. Lie down immediately—give no attention to business or household cares—preserving both mental and bodily quiet.

2. Take 30 drops of Laudanum, with 20 drops of spirits of Camphor, and 30 drops of tincture of Capsicum, mixed in sweetened water, and repeat the dose every half hour, or after each evacuation.

3. If there should be pain or cramps in the stomach or bowels, or in the extremities, with or without looseness, give a teaspoonful of solution of Morphia, with 30 drops of tincture of Capsicum in sweetened water every half hour, place the feet in a hot mustard bath; apply a mustard plaster, ten by twelve inches in size, (made by mixing the mustard with water to the consistence of paste, and spread on a piece of muslin, covered with lace, to keep it from adhering to the skin,) all over the bowels; let it be retained thirty minutes; cover the patient with blankets, and give him ice to eat, or iced rice water for a drink.

Do not, however, depend upon these remedies, but without delay despatch a messenger immediately for your physician.

We present these views of what is necessary to be done by our fellow-citizens, both in anticipation of, and after the Cholera has made its appearance in our city; not for the purpose of discussion; not that we look upon them as unnecessary and useless at the present time, nor with any desire to increase the already awakened fears of the community, or to cause improper anxiety and alarm; but on the other hand, to discourage and prevent any needless excitement by teaching the people to look at the subject in a rational manner, as to how to conduct their domestic sanitary relations, and to show them the duty they owe the public welfare, by urging upon them to



aid the Board of Health in carrying out and enforcing those sanitary improvements that are necessary for protection against the preventable causes of Cholera. While at the same time, our city may be placed in a condition as will prevent the extensive prevalence of the epidemic in our midst, and in the event of its appearance, every family will be prepared with the proper remedies to meet and mitigate the disease.

The purification of the fever nests, and plague spots in our city by cleansing, and by ventilation, at a time too, when we are threatened with a visitation from Cholera—will be found to exercise a most useful sanitary influence in the event of the scourge passing us by. It will improve both domestic and public health. It will correct numerous localizing causes of disease. It will remove much filth, both vegetable and animal, will restore a more perfect ventilation; in short, it will accomplish a thorough purification of the entire city.

Should our city escape the Cholera—and should we accomplish that which we have just suggested—we shall consider that we have performed a good work, and one in which our fellow-citizens will be entirely satisfied.

By order of the Board of Health.

—WILSON JEWELL, M. D., *Chairman.*  
 —ELIAB WARD, M. D.,  
 JACOB B. COATS,  
 PETER ARMBRUSTER,  
 —JAMES E. ROGERS, M. D.,  
*Sanitary Committee.*

May 8, 1866.



The first thing I noticed when I stepped  
out of the car was the smell of  
the sea. It was a salty, sweet  
smell that I had never before.  
The sun was shining brightly  
and the water was a deep blue.  
I felt like I had entered a new world.

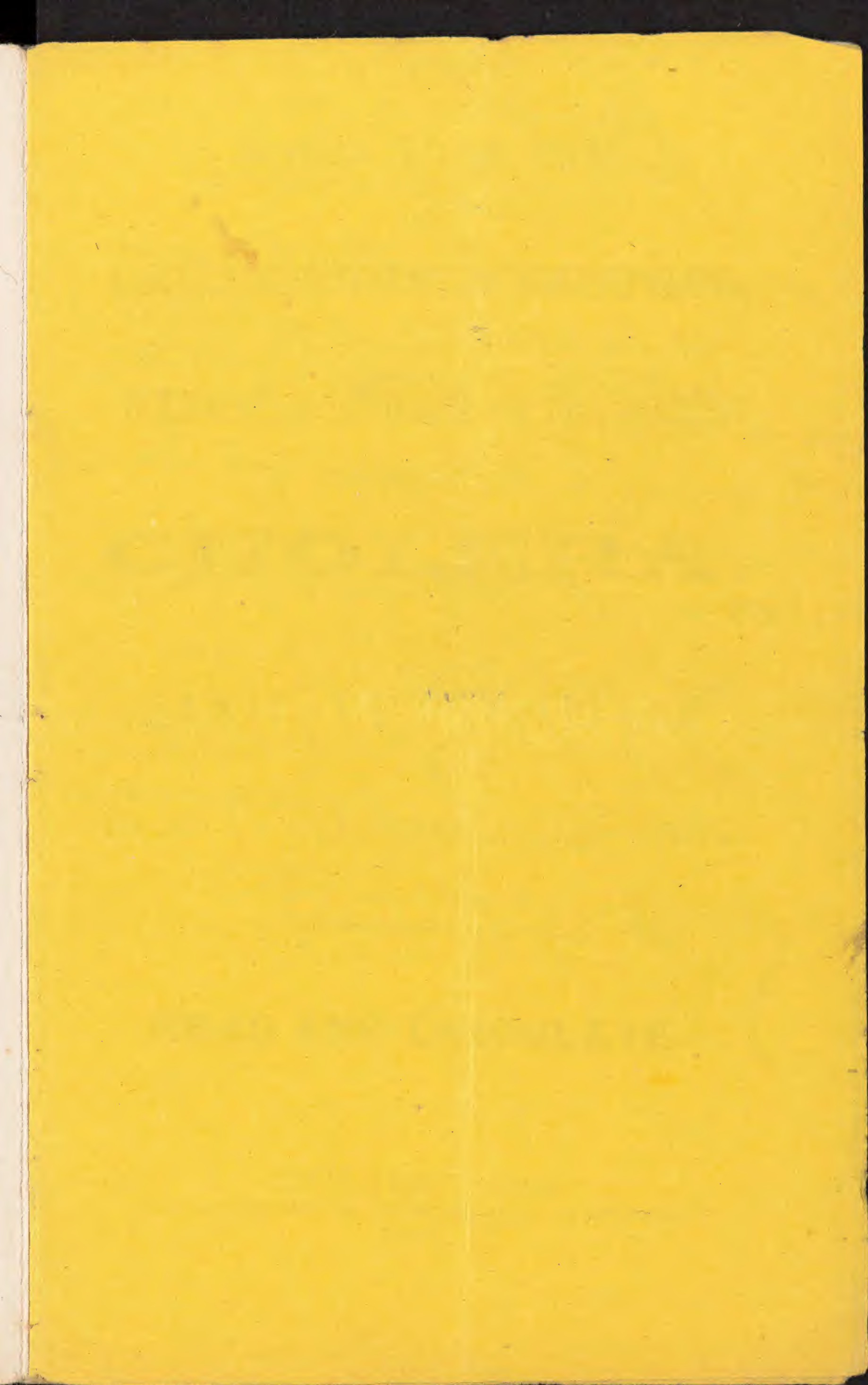
The beach was wide and sandy.  
There were many people here,  
some sitting on towels, some  
playing in the sand. I walked  
along the shore, feeling the sand  
between my toes. The waves  
were breaking gently against the  
shore, creating a soft, rhythmic  
sound. I felt a sense of peace  
and tranquility that I had never  
before.

I walked along the shore for  
hours, watching the sun set  
over the ocean. The sky was  
a mix of orange, pink, and  
purple. The water was a deep  
blue. I felt like I was in a  
dream. I had found a place  
where I could relax and enjoy  
the beauty of nature.

I had heard that the beach was  
beautiful, but I didn't know  
how beautiful it would be. The  
sand was soft and the water was  
clear. I had found a perfect  
place to relax and enjoy the  
sun. I had found a place where  
I could forget all my worries  
and just be. I had found a  
place where I could be happy.

I had found a place where I  
could be happy. I had found a  
place where I could relax and  
enjoy the sun. I had found a  
place where I could forget all my  
worries and just be. I had found  
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I had found a place where I  
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place where I could forget all my  
worries and just be. I had found  
a place where I could be happy.







# Etiology of Cholera.

1. Its cause must be material, not  
merely cosmic or conditional; it is  
probably organic in nature.

2. It migrates across the globe, not  
depending for consequence upon human  
intercourse.

3. It is not contagious from person to person.

4. Its great promotive cause is

Animal matter in a state of decomposition.

5. Sanitary Police (~~not quarantine~~)

is its efficient preventive.



SANITARY  
AND  
PREVENTIVE MEASURES,  
OR  
WHAT MAY BE DONE BY THE PUBLIC  
IN ANTICIPATION OF THE  
**CHOLERA.**

BY THE  
SANITARY COMMITTEE  
OF THE  
BOARD OF HEALTH OF PHILADELPHIA.

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"To be forewarned is to be forearmed."

---

**READ AND CIRCULATE.**

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1866.



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WILL BE DONE BY THE PUBLIC

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1866.



CHARTER

OF THE

WILLIAM L. BROWN

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# SANITARY

AND

## PREVENTIVE MEASURES, ETC.

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The Sanitary Committee, in answer to the communication of the Board of Health, addressed to them, "what measures are necessary to diminish the epidemic Cholera, and what directions, if any, are required to allay the fears of the people and to instruct those who may be threatened with premonitory symptoms," beg leave to suggest the following:

The Board of Health have been for several months engaged in placing the city in a condition for the prevention of Cholera.

A thorough and systematic inspection of every private dwelling, factory, work-shop, stable, and all other out-houses, with reference to the sanitary condition of their vaults, cesspools, sinks, drains, cellars, yards, hog pens, cow stables, manure heaps, and every other portion of the premises, together with the public markets, obstructed sewers, filthy streets, gutters, or, wherever there was reason to believe that Cholera would prevail should it visit us, has been undertaken by specially appointed inspectors or agents.

These Inspectors have been faithfully at work, have been cheerfully received wherever they have visited, have given great satisfaction to the Board, and in addition to their labors, we are happy to know, that much of this sanitary work has been done by the citizens themselves, thus co-operating with the Board of Health in the removal of those causes, which if suffered to exist, when the scourge makes its appearance, would breed disease and be fruitful sources of death.



It is a fact well known, that there are certain locations and conditions of a city, which favor the development of the epidemic Cholera, places which are elsewhere denominated *Cholera fields*, and which constitute the *localizing causes* of the impending pestilence. These fields are the low, damp, filthy, undrained, unventilated, unlighted or dark and densely populated districts—spots where, should the disease become established, its course would be deadly, and where it remains the longest time. This has been our experience in former visitations of this pest, and we have no reason to believe that the anticipated disease will pursue a different route.

In Europe it has been established by the reports which have reached us, that the disease prevails in an exact ratio with the presence of filth and the neglect of cleanliness. In the former visitations of Cholera in this country, and especially in this city, it ever sought out those homes of pestilence, the crowded and filthy tenant houses, the narrow courts and alleys, and other filthy public streets, and it was here that death asserted its claims and filled the city with its relentless presence.

Having a knowledge of this fact and realizing that preventive measures, such as cleansing, draining, ventilation and other efficient sanitary regulations, will go very far to prevent the spread and lessen the ravages of Cholera, that we have instituted this sanitary house-to-house inspection.

The work is still in progress, and we hope that before the threatening pestilence reaches our homes, we shall be fully able to announce that all localizing causes have received careful attention, that every case of domiciliary impurity has been removed, and that good sanitary police regulations have been enforced all over our city.

Having thus presented the agencies and methods which we have adopted and applied for the mitigation and prevention of Cholera, we come now to furnish a few directions to allay the fears of the people, and to instruct those who may be threatened with premonitory symptoms, or be liable to exposure to the epidemic, should it make its appearance in our midst.

### Precautionary Rules and Duties.

Cholera is a preventable disease. Its exciting causes, filth, dampness and foul air, are avoidable. Pure air and cleanliness are the required remedies for its prevention.



Give particular attention to your premises ; their CLEANLINESS, their VENTILATION, their DISINFECTION, and allow no overcrowding in your houses.

### Cleanliness.

Keep your houses, cellars, yards, vaults and sinks, clean, wherever it can be done. Whitewash the walls of your houses, cellars, fences, out houses, shops, factories, store houses, and every other place about your premises where dampness exists, and where mould or mill-dew forms. It keeps the walls dry, sweet and clean, and prevents the accumulation of moisture, which promotes putrefaction, giving rise to fungi which are thought by many to be a specific cause of disease. Avoid all collection of coal ashes mixed with kitchen garbage, slops, stagnant water and other semi-solid, or liquid filth, any where about your premises.

Should any of your family become sick, be careful to have your bed pans not only emptied immediately, but thoroughly washed, disinfected and aired. Keep the patient as clean as circumstances will admit.

“Putrefaction and the effluvia from effete organic matter, are among the most active and preventable of the *localizing causes* of Cholera and fevers. To prevent such evils, and destroy noxious exhalations, is the chief object of all the processes of cleansing and disinfecting.

Water is the universal agent for cleansing. Clothes-washing, scrubbing, and flushing, will never be properly appreciated until the relation of these homely duties to the prevention of infection and disease is more generally understood.

Sewers, house-drains, water-pipes, and water-closets, should be frequently *flushed* with water—let on the largest practicable volume—for thorough cleansing: water-closets, privies, and water-pipes in houses should be *flushed* in this manner every day.

Infected clothing and the utensils used in the sick room, should be washed or scalded in hot water the moment they are removed from use. In the advice recently promulgated by the Privy Council of Great Britain, with reference to guarding against Cholera, it is recommended that the clothing of the sick with that disease should be immediately plunged into boiling water, or soaked in a weak solution of chloride of lime, or permanganate of potassa. Of the former, 1 oz. to the gallon of water is sufficient ; or of the latter, a few



grains, or just sufficient to give the water a slightly reddish tint; this is a powerful disinfectant, and if boiling heat cannot at once be applied to the contaminated garments, the permanganate fluid should be employed. Soap and other alkalies are valuable aids to water-cleansing."—*Council of Hygiène and Public Health, N. Y.*

### Ventilation.

!! Your premises, particularly sleeping apartments and cellars, should be thoroughly ventilated. Ventilation is no less a purifier than water. It cleanses by oxidizing, and drying. Keep your houses open, and your windows hoisted during the day in good weather, from 10 o'clock in the morning until 4 in the afternoon, that they may have the full benefit of sun-light and a free circulation of pure air. During the remaining hours of the day and through the night, keep the windows closed. When the weather is cool or rainy, be sure to keep a fire in the house in order to prevent dampness, or in sparsely settled neighborhoods, or in the suburbs of the city, have a fire in the house the entire season.

*Dated May 8, 1866.*

### Disinfectants.

Disinfectants are equally important. They arrest putrefaction and destroy noxious gases. But in no instance should they be employed as a substitute for a pure atmosphere. "They are simply aids in restoring and preserving healthful purity, and not substitutes for cleanliness and pure air."

They may be employed in cellars, yards, privies, vaults, sinks, water closets, sick rooms, bed pans, stables, and in other places about your premises, or wherever practicable, when there are offensive odors emitted.

### Disinfectants, and how to use them.

1. *Quicklime*.—To arrest putrefaction, to act as a rapid dryer, and to decompose certain moist and hurtful effluvia, strew the dry lime upon the earth; or, distribute upon plates, etc.

2. *Chloride of Lime*.—Employ this for the same purpose as quicklime, also as one of the cheapest sources of chlorine. One pound of this substance will usually disinfect about 1,000 gallons of fluid sewerage. To mix immediately with offensive materials, it may, for convenience, be combined with water in proportion of 1 lb. to the gallon.



so, another generation may afford the demonstration of what is right, in such a way that no one can gainsay it.

**2. Calomel.**—This, too, was an old East Indian remedy. Suggested by the almost universal absence of bile in the discharges, which was thought to indicate the need of stimulation of the torpid liver, it has been more largely given than any other medicine in cholera.

Unhesitatingly, I hold the opinion that calomel is of no earthly use in cholera. The argument in its favor, from the absence of bile in the stools, is rebutted by the fact of its abundance in the gall-bladder; while the clinical experience quoted for its success is accounted for by the addition to it, almost always, of opium, in the prescription. Nor is the amount of success with it, even then, great. Such is Dr. Gull's conclusion, based upon the examination of a great mass of evidence, given in his report.\*

Dr. Ayre, a British practitioner of some note, gave prominence to a modification of the old calomel treatment (in which twenty grains were sometimes given at once), by prescribing a grain of calomel every five minutes during the attack.

**3. Saline Treatment.**—Dr. Stevens, of Jamaica, proposed this, upon the view that the main patho-

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\* Report, etc. of Drs. Baly and Gull, already cited.



logical element in cholera was the loss of salts from the blood in the discharges. After the general failure of saline solutions (of common salt, carbonate and phosphate of soda, etc.), given by the mouth, had been conceded, Dr. Mackintosh, of Edinburgh, and others, tried the method of injection into the veins (half an ounce of common salt, and four scruples of sesquicarbonate of soda, dissolved in ten pints of water, at  $105^{\circ}$  to  $120^{\circ}$  Fahrenheit). Under this plan, resorted to during collapse, of 156 patients in Dr. Mackintosh's hands, only twenty-five recovered. Remarkable improvement, almost like a resurrection, appeared in several, who afterward fell again into collapse, and died. The suggestion has been recently made, that it may have been the *temperature* of the injected liquid which produced the benefit, so promising and yet transient.

**4. Eliminative Treatment.**—Dr. George Johnson, of London, has urged this with especial vigor. The castor-oil medication of cholera owes its trial to him. Some recent lectures of his on the pathology and treatment of the disorder give a full and very intelligent exposition of his views. A prominent idea with him is, that the general collapse is due especially to anæmia of the lungs, owing to spasmodic contraction of the pulmonary artery and its branches. I regard this as only a *part* of the *universal* arterial (and other) involun-



tary muscular spasm, belonging to what I have called the *ganglionic tetanus* of the collapse. But the essential feature of Dr. Johnson's pathology is the opinion that, the disease being toxæmic, a morbid poison exists which must be *eliminated* from the blood; and that the discharges are the media of this elimination. Therefore, the vomiting and diarrhœa are salutary or relieving; and ought to be rather encouraged than checked. He goes even so far as to repudiate the commonly accepted belief, that "premonitory diarrhœa" or "cholerine" ought to be checked; considering it a fallacy to assert that those who are relieved of such symptoms by mild treatment were really, or would have been, cases of cholera at all.

I am entirely unable, from observation or reflection, to assent to these views. They have very few advocates or supporters, besides the distinguished physician whose name and ability command for them at present careful consideration. It is true that patients have died of cholera without vomiting or purging. I saw in 1849 a woman in collapse (from which she recovered) for several hours without either; and many such cases are on record; though, in some, after death, the intestines have been found to be distended with the rice-water liquid. But the checking of the discharges is almost always the sign of the improvement and recovery of the patient. And we



cannot, on Dr. Johnson's dictum, set aside or quash all the accumulated evidence, in Europe and in this country,\* which shows that it is desirable and important to *check all watery diarrhoeas in cholera time*—such fluxes having been proved to be often premonitory of cholera attacks.

**5. Ice to the Spine.**—Dr. John Chapman's ice-bags threaten to become the "pathy" or therapy of the day, with those who are zealous and venturesome in experimental practice. Upon reasons of a physiological nature, not appropriate for discussion here, I disbelieve altogether in the theory of his therapeutics. In his pamphlet upon "Diarrhoea and Cholera," lately published, he gives but one case of the latter disease, and does not say whether the patient recovered or died.

As ice is so useful when internally given in cholera, it *may* be safe and beneficial when applied to the spine. Not having seen it tried, I am not prepared to deny the possibility. It is one of the experiments to consider, in so desperate a disease. But, if it *should* hereafter prove useful, I should explain that result quite otherwise than Dr. Chapman has done, in part at least.

**6. Sulphuric Acid.**—Dr. Cox, of England, after—

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\* See Lectures on Cholera, by Prof. A. Clark, of New York; Report to the Royal College of Physicians, 1854; also, Madin, Briquet and Mignot, etc.



ward Mr. Buxton and Dr. Fuller, and very recently Dr. Jules Worms, of Paris, have especially recommended dilute sulphuric acid in all stages of cholera. Many others especially report well of its action in the *premonitory diarrhœa*. Such an action would comport perfectly with the view I have taken of the *organic* nature of the poison of cholera; sulphuric acid being so potent a destroyer of everything organic, except such *mirabilia* as the *Acarus Crossii*.

Dr. Worms' treatment (based on the results in 238 cases of cholera, and 150 of cholerine, in 1865) is as follows: For prodromic diarrhœa, he makes a "mineral lemonade," of about half a drachm of concentrated sulphuric acid to a pint or more of sweetened decoction of salep (arrow-root would do as well). The patient is to take of this every hour a wineglassful, till relieved.

For confirmed cholera, the patient being kept in complete repose, there is administered every half hour a glass of a similar lemonade, of the strength (about) of a drachm to the pint; ice and wine also being allowed *ad libitum*.

**7. Opium in large doses.**—This practice had once many advocates; now they are few. Prof. Austin Flint, of New York, is one of them; at least *morphia* is advised by him, in full dose, repeated if required. A great deal of evidence of the insufficiency of such a plan has been published;



although it is *not worse* than several other methods. Letting alone would probably be better. The *secondary fever* is apt to be more severe and more often fatal after treatment of the attack by large doses either of opiates or stimulants. Large quantities of brandy (I add, by the way) have been often used, with no good results.

Statistics are given, as follows, of the results of some of the most common modes of practice in cholera, by practitioners in Great Britain, as reported to the "Treatment Committee of the Medical Council of the Board of Health," 1854-55.

Taking all grades of the disease, the deaths were—

	Per Cent.
With Eliminants . . . . .	71·7
Stimulants . . . . .	54·0
Calomel and Opium . . . . .	36·2
Chalk and Opium . . . . .	20·3

Of *collapsed* cases, the mortality was—

	Per Cent.
With Calomel and Opium . . . . .	59·2
Larger doses of Calomel . . . . .	60·9
Salines . . . . .	62·9
Chalk and Opium . . . . .	63·2
Calomel, small doses . . . . .	73·9
Castor Oil . . . . .	77·6
Sulphuric Acid . . . . .	78·9

Much is uncertain, obviously, in such statistics, without further account of dosage, circumstances,



etc. But this seems to follow; that *neither treatment has much to boast of success.*

8. Treatment by antispasmodics and mild stimulants, in small doses at short intervals; with ice, and external frictions, etc.—In 1849, my first two cases of cholera were fatal; although assiduously watched, each for a day and a night. The third, I saw with the late Dr. Wm. E. Horner, Professor of Anatomy in the University of Pennsylvania. I left the treatment to him. He sat down by the bedside of the patient—a man, blue, cold, and with a scarcely perceptible pulse, copiously vomited and purged, with rice-water. Having ordered ice,\* Dr. Horner took from his pocket a vial containing a mixture of chloroform, oil of camphor, and laudanum; which he gave in sweetened ice-water, in small doses, *every five minutes* by the watch. Each dose was followed by a piece of ice.

Soon the vomiting diminished, afterward the diarrhœa, and in an hour and a half the veins on the back of the hand began to fill up, and the blood to return in them more rapidly after pressure. Diminishing the frequency of the doses, we left him, an hour later, evidently convalescent. When I saw him after several hours again, he was

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\* Ice was used, and lauded, in cholera, by the celebrated Broussais, in 1822.



sitting up in bed, at ease, and so changed, that I doubted at first his identity. No secondary fever followed; he was cured.

Naturally, I repeated this treatment in all my subsequent cases, some of which were of extreme severity; and with gratifying success. The memorandum-book of the number of these cases has, to my present regret, been mislaid. After the treatment of Prof. Horner had been adopted, however, I saw no death, except in the instance of a drunkard, two or three hours in collapse before any medical treatment began.

Should I be attacked with cholera, such is the treatment I desire. Conscientiously I believe, that nothing else will afford a better chance of recovery. I merely altered Prof. Horner's mixture to a tincture, for better preservation; adding some minor adjuvants. This recipe will be given directly. Frictions and sinapisms may also be added. The great merits of this plan are its antispasmodic nature, and the administering of small doses at *very short intervals*. This is eminently demanded in cholera. Phthisis may be a complaint of years; hooping-cough, of months; typhus, of weeks; pneumonia, of days; but cholera must be numbered by its hours, half hours, or even minutes.

Having reached, then, this conclusion, I may



add, that a *rationale* for such a treatment is discernible. I only follow many good authorities in the opinion that cholera is, symptomatically and pathologically, a poison-spasm, or tetanus of the ganglionic system. Taken early, that condition may be *prevented*, by mild opiates and stimulants, in the *premonitory* stage. Later, while any medicines will act, these will do the most. What is needed in confirmation of this explanation, more, than is given by the action of quinine in preventing an anticipated chill, or, of the same, in full quinization, curing the paroxysmal disease (a toxæmic *neurosis*) of intermittent? An antagonistic influence against that which so perturbs innervation throughout the body; such is the whole definition that we can give of the remedial power shown in either case.

Let me be more specific in reference to treatment. Premonitory diarrhœa is very generally admitted to be present in a majority of cases of cholera.\* In the East Indies, many writers, of different dates (Lawrie, 1832, Stewart Clark, 1864, etc.), assert such a stage to be an exception instead of the rule. But, in India, they have a premonitory or incipient stage of another kind;

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\* Barraut asserts fixed contraction of the pupil to be the first prodromic sign; M. Worms makes the same statement in regard to albuminuria.



characterized by great languor or depression, with restlessness, and sometimes ringing in the ears, occurring mostly in the night. Stewart Clark states\* that, in this stage, a mild opiate ("with a little calomel or blue pill"), with a cup of warm tea or a small dose of a diffusible stimulant, as a few grains of carbonate of ammonia, or a little weak warm brandy and water, will arrest the attack in a great portion of cases otherwise to become serious.

Such symptoms, as well as diarrhoea, should be noticed here, during a cholera epidemic; and I believe the same treatment will meet both. Rest, warmth, and mild, composing, but gently stimulating draughts; paregoric, aromatic spirit of ammonia, tincture of ginger, lavender, etc., with a mustard-plaster over the abdomen, and a hot mustard foot-bath if coldness of the body increase, or vomiting begin; such are safe, and I believe will be efficient remedies. The above may be called the first or prodromic stage.†

The next has been well called, by Prof. A. Clark, the *rice-water* stage. For that, the treatment I have described as given to me by Prof.

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\* Hygiene of the Army in India, p. 12.

† The recently published experience of Dr. Hamlin, in Constantinople, confirms the importance of the above early treatment.



Horner is particularly adapted. My recipe, based upon his, is as follows:

R.—Chloroform. et  
Tinct. Opii et  
Sp. Camph. et  
Sp. Ammon. Aromat. āā f3jss;  
Creasot. gtt. iij;  
Ol. Cinnamom. gtt. viij;  
Sp. Vin. Gall. f3ij.—M.

Dissolve a teaspoonful of this in a wineglassful of ice-water; and give of that two teaspoonfuls *every five minutes*; followed each time by a lump of ice.\*

Friction of the limbs with brandy and red pepper will be, along with large mustard-plasters on the back and pit of the stomach, useful to promote reaction.

The third stage is that of absolute collapse; blue, pulseless, shrunken, voiceless. Should a case go on, in spite of the above-mentioned treatment, into this state, what else can be done? All now

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\* I take from Dr. Aitken's Practice the following recipe, much used and approved in India and England: R.—Ol. Anisi, Ol. Cajeput., Ol. Juniperi, āā 3ss; Æther, 3ss; Liq. Acid. Halleri (*i. e.* one part concentrated sulphuric acid to three parts of rectified spirit), 3ss; Tinct. Cinnam., 3ij.—M. Dose, 10 drops every  $\frac{1}{4}$  of an hour, in a table-spoonful of water.



seems to be desperate experimentation.\* Let the ice-bags be *tried*, and judge them by the trial. I would also try belladonna internally, as an antagonist of vascular spasm. Leclerc, of Tours, introduced it in 1854; Barraut, of Mauritius, used it ( $\frac{1}{4}$  grain every half hour), and reported success. He also employed *hypodermic injections of sulphate of atropia*. This should be tried again in bad cases. So might be, as was suggested by me in 1855, *warm baths of infusion of stramonium* (Jamestown weed) *leaves*; on the same indication. Also, the injection of hot liquids into the rectum; the warm bath (hot baths cause *distress* in the collapse), with *carbonate of ammonia* added, as used sometimes in malignant scarlet fever (West) in children; or, the warm *mustard* bath. *Hot air*† bathing, if practicable, in the manner so praised of late by Erasmus Wilson and others, would be worth trying; and so would even the inhalation of nitrous oxide. Let us confess honestly, for it is wise to do so, our art is here very weak; *fifty per cent. or more of collapsed cases die*; shall we not endeavor to *discover* new

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\* Duchaussoy and Vernois assert the non-absorption of medicines given by the stomach during the collapse; but Magendie proved that a very slow absorption does occur.

† Dr. George Johnson states that he has seen the hot-air bath used without success.



resources? All honor to those who, at the risk of their own lives, contend yet, with so forlorn a hope, and so little glory to be won. There is room yet for, and possibility of obtaining, a final triumph.

Two words remain still to be said, with short comment: *house to house visitation*, and *houses of refuge*. These are measures of great consequence, shown to be of value during cholera epidemics. The latter, especially, is of notable importance; that is, the establishment of houses of refuge in *salubrious places*, into which persons from tainted districts most liable to the disease may be received, on the occurrence there of the first cases.

That there *are* such tainted districts, has been amply proven. Thus, Dr. Laycock has shown that in York, England, the first death from cholera occurred in the spot where plague had been traditionally the worst, in a badly-drained district. In Edinburgh, the first case in 1848 occurred in the same house as did the first in 1832. In Holland, at the town of Groningen, in 1832 and 1848 but two houses in the better part of the town were attacked; the same houses exactly in both epidemics.

Dr. Alison reports that in the first three months of the epidemic at Edinburgh, in 1832, 353 persons were taken in at Houses of Refuge, from 70



tainted districts, houses, and rooms in which decided cases or deaths had occurred. Of these, only 15 took the disease, and 7 died after removal. Of the 346 thus surviving brief exposure, it is very probable that more than half would have died had they remained in the midst of the infection. At Glasgow, in 1849, 401 persons were taken into Houses of Refuge from tainted districts; only 19 of these took the disease and but 5 died. At Oxford, England, the same year, of 70 persons so taken in, none died. The London Board of Health, in its "General Report," gives the fact that of 1691 of whom the Board had accounts as taken into Houses of Refuge, but 33 were attacked, with only 10 deaths. These numbers would have been larger, but for the very common unwillingness of poor and ignorant people to leave their homes, chiefly from want of confidence in the greater safety of so doing. Could this be overcome, I have no doubt that an immense saving of life might be produced by Houses of Refuge, allowing also the places which are proved "foci of infection" to be thoroughly purified at once.

House to house visitation, by sanitary inspectors to abate nuisances, small and great, and by medical men to treat premonitory symptoms, might also have great preventive value. The establishment of cholera hospitals may be made necessary when the number of cases is great, espe-



cially as the greatest proportion always happens among the poor, who are ill provided for attendance at their homes.

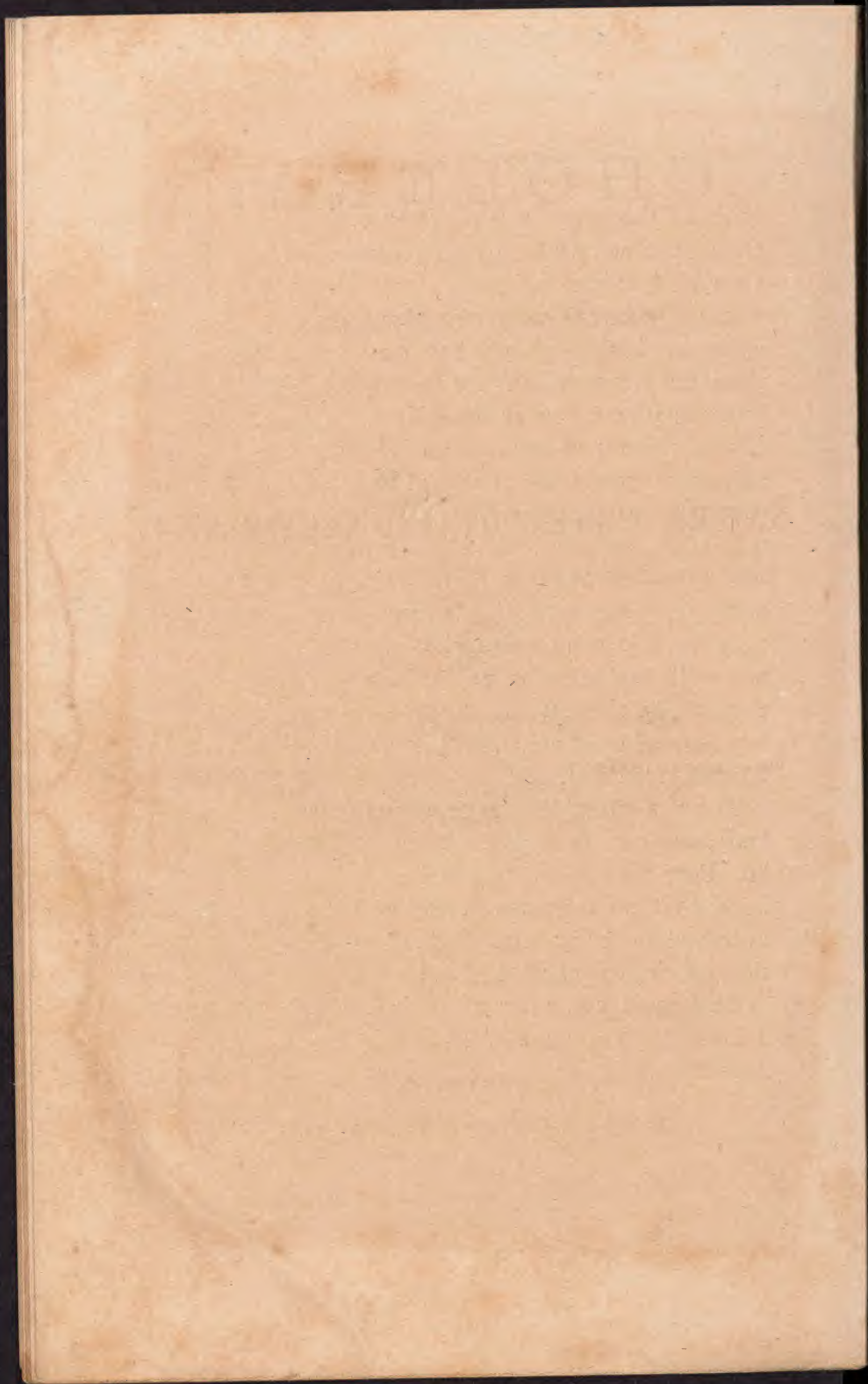
There should be no *panic* about cholera; especially in Philadelphia. Let our authorities do their full duty, in sanitary measures of local improvement and renovation; let them give to our city its pristine cleanliness, and cholera may reach and sweep across the continent without a case occurring here. Baltimore has had such an immunity more than once. And, in our worst visitation, the mortality has not been very great. Fear, moreover, aggravates the danger.

While, if it come, those who can leave as well as not, will, undoubtedly, be most safe in the open country, for those whose duties keep them in the city, courage and equanimity are not only becoming but expedient.

There is but slight exaggeration in the proverbial assertion, that "Pestilence kills thousands, but Fear tens of thousands." Above all, let us hope that no mistaken terror of contagion will ever lead to the extreme barbarity of desertion of the sick or neglect of the dead.

Cholera is not, after all, a hard death to die. To me, it appears one of the easiest modes of exit from the world.







form to such regions, whilst at any other periods it cannot.' (Truly a goodly array of facts to be established beyond all question in the opinion of so accurate an observer as Pettenkofer.)

The third section treats of the 'Periodical Appearance of Cholera in India.'

'In the endemic area the maximum of cholera occurs in the hot, dry season (April), and the minimum in the warm, moist season (August). In the north-west of India, where cholera is only periodically epidemic, where, according to Bryden and Mackinnon, certain climatic conditions are exactly the reverse of those in Lower Bengal, the maximum of cholera also occurs at exactly the reversed period, namely, in the moist season, in the rains.' Thus we have spring (February to April) cholera, for which Calcutta is typical, and monsoon (middle of June to end of September) cholera, as in Lahore and the Panjáb generally. Some places have two maxima, thus Madras has one in February, and another (a weaker one), in September. Again, Bryden 'points out that cholera sometimes also readily appears in the cold season (the end of October to January).' But it is also shown that in some years the average cholera rhythm of a place may be extremely altered; so that, for instance, the maximum of cholera in Bengal may be much later than it is usually, almost in fact, at the proper time for the maximum of the Panjáb; this happened in 1866, when cholera was very severe in Lower Bengal; and the converse happened in the Panjáb in 1867. Bryden considers that the essential periodical determinant for cholera is the monsoon influence; cholera travels across the western epidemic district in its wake. 'The dates of reproduction or invasion extend from June 20 to August 7, becoming gradually later as progress is made towards the limits reached by the monsoon influences in the north-west; for one province the end of June and July is normal; in another, the cholera of July predominates; in a third, that of August. Where the monsoon ends, there the epidemic of the year ends; in 1856 and 1861 it was at Lahore; in 1865, in the Ferozpoore district. The limit of the monsoon is marked geographically by the north-western desert, which is, on every occasion, the limit in the north-west of a cholera invading with the monsoon from the south-east.'

Pettenkofer mentions as a weighty fact, that 'the famine years in the Panjáb (1860-61), are preceded by periods free from cholera, but almost rainless, and that the famine years of Lower Bengal (1866), are introduced by periods abounding in cholera, but poor in rain or with an abnormal distribution of rain.'

In 1860 and 1868, the cholera epidemics ceased abruptly where the monsoon failed.

Pettenkofer puts it thus, 'that the rain-winds, i.e. the rainfall, i.e. the changes in the moisture of the soil, play a chief part as a periodical determinant in India, cannot be questioned,' and he adds, 'it is to Bryden's credit to have established beyond all doubt the existence of a local and periodical disposition to cholera in India, entirely independent of human intercourse; a disposition which appeared even from Macpherson's communications.'

These investigations, the most exact and comprehensive that have been ever made, lead then to conclusions quite opposed to the prevailing views, and more akin to those of the third decade of this century, when cholera was regarded as a miasmatic

disease arising from the soil, and not diffused by means of human intercourse.

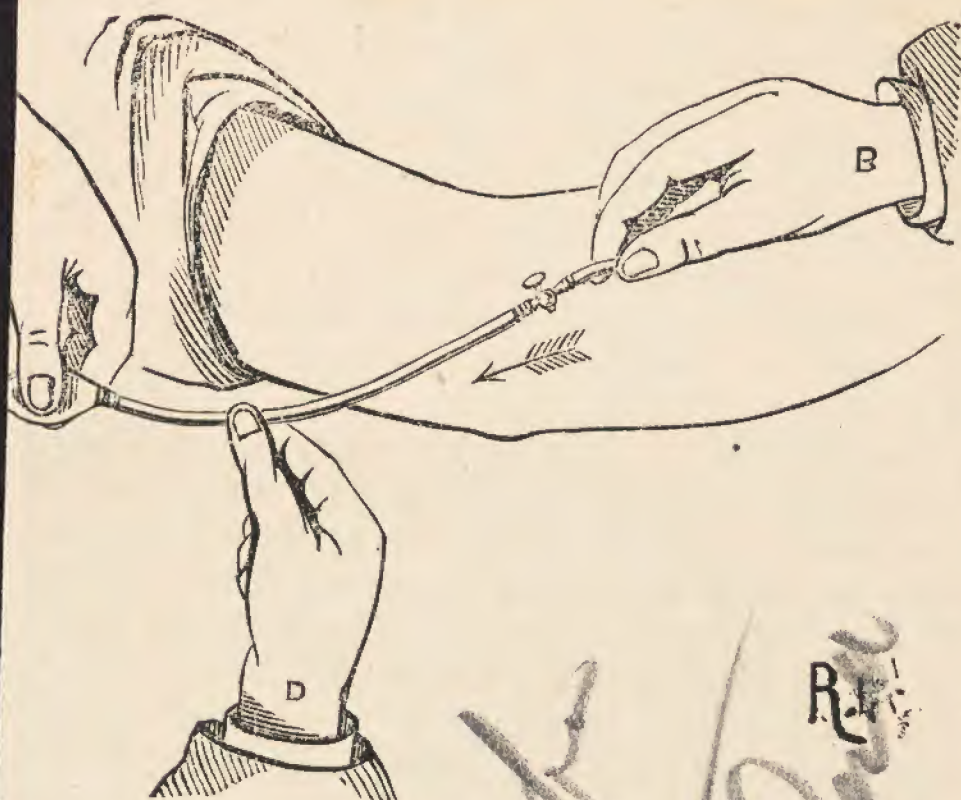
Bryden says of its alleged propagation in this latter way: 'In this country we act upon the belief in the transmissibility of cholera in such a manner, and the precautions used against the possibility of infection from such a source have been elaborated to the last degree; and yet it is a melancholy truth that the liability of our cantonments and regiments to cholera in its worst form, is as great now as it has been at any time during the past fifty years, and that the absolute mortality is on the increase.'



author before; he in reality means the *Ursus* water, which he has mentioned, and which is used along with the waters of the new bath for bathing. We could have wished, too, that Dr. Sedgwick had told us something of the condition of the Wyspring, and that he had visited the sulphur springs—remarkable for the quantity of carbonic acid which they contain, and had given us his opinion as to the chance of their being ever fit for use. Some mention, too, of the curious mofettas or gas-escapes, strong enough to kill beetles or small birds, would have been interesting to his readers. Still, and though we have not

gience from the nearest point on the Clur railway; not that the same difficulty of access has prevented an immense concourse to St. Moritz. If you once have reached St. Moritz, the drive down the valley need not occupy more than six or seven hours. Dr. Sedgwick has expatiated with justice on the magnificence of the surrounding scenery. Some centuries ago the waters of Schuls were considered efficacious in *infarctions*. In theory, they are just the waters for chronic enlargements of the liver or spleen, and in practice Dr. Killias says they have been found useful in the effects of endermis poisoning. We want more clinical observations of such cases. Dr. Sedgwick gives ample details regarding the climate of Tarasp, and we have no doubt that, in cases of threatened phthisis, a residence during the summer months in its valley would be as efficacious as in most high lying places, we should say decidedly better than at St. Moritz. There is an abundant supply of milk. It is satisfactory that Dr. Sedgwick is able to vouch for the comfort of the Kurhaus as a residence. There is a good hotel in Schuls. J. MACPHERSON, M.D.

## VENTIONS.



## TRANSFUSION APPARATUS.

assistant holding the efferent tube and the lips of the small wound together, and A shows the afferent tube secured in the same manner. The India-rubber portion of the apparatus, filled with water, and kept so by turning the cock at each end of it, is now fitted into the two tubes. The cocks are then turned straight, and the operation commenced by compressing the India-rubber tube on the efferent side D, and squeezing the bulb C. This forces two drachms of water into the afferent vein. Next shift the hand from D to D' and compress the tube on the afferent side; then allow the bulb to expand slowly, when blood will be drawn into it from the efferent vein. By repeating this process any quantity of blood can, at any rate, be transmitted, the amount being measured by counting the number of times the bulb is emptied.

The advantages of this method of transfusing blood are—

1st. The chances of coagulation are small, because the blood is removed from the action of the living vessels for only a few seconds, and glides smoothly through the India-rubber pipe without being exposed to the air.



Dr. Pettenkofer cannot at all agree with these 'theoretical conceptions,' but holds that 'independent of every theory, Bryden has established against all questions that locality constitutes an essential factor in the prevalence of cholera; that the latter is in some way associated with local conditions, but in addition that these conditions are associated with certain years only; that only in the endemic area they are furnished every year; that they only occur periodically in the so-called epidemic area lying beyond it; and that it is only at such periods that cholera can be transplanted in epidemic



roots, and sometimes slows the pulse in this way even when the blood-pressure is low, but that there is no necessity for denying to the increased blood-pressure produced by digitalin that effect on the vagus-roots which it possesses when arising from other causes.] T. LAUDER BRUNTON, M.D.

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MR. W. SAVILE KENT, of the British Museum, favourably known for his biological and zoological researches, has been appointed curator of the Brighton Marine Aquarium, in succession to the late Mr. Lord.

*Pettenger on Cholera* ①  
*In India*



stretched themselves and executed natatory movements such as are seen in animals poisoned by picrotoxin. After large doses (0.1-0.4 grm.) the animals lost their appetite, and remained often for two or three days after the manège movements had ceased, in a depressed and sleepy state. In four days at most, however, they recovered completely from 0.4 grm., so that little is to be feared from the administration of an overdose of the drug. On *post-mortem* examination of animals which had been killed by large doses, of apomorphia, no pathological appearances could be observed either in the abdominal or thoracic viscera, nor yet in the brain, with the exception of one case, in which a perfectly circumscribed congestion of the middle parts of the base of the brain, and especially of those adjoining the pons, was observed. In reference to the action of apomorphia on the nervous system, Quehl did not find it affect either sensory or motor nerves. Division of the vagi prevented vomiting in every case. In this particular his results differ from Siebert's and agree with Wood's experiments on veratria. Narcosis by chloroform also prevented vomiting. Apomorphia has no action on the blood-pressure. It has no influence upon the rise of pressure which takes place when a sensory nerve is irritated. It has no action on the muscles, either voluntary or involuntary. Rugel and Böhm (*Archiv f. klin. Med.* ix. 211), like Gee, found that apomorphia had no action on the bowels. The apomorphia which they obtained from Macfarlane and Co., North Bridge, Edinburgh, was much more active than the German preparation obtained from Merck. The latter also caused more sleepiness, and the symptoms which preceded and followed the vomiting lasted longer than when the English preparation was employed. Blaser (*Arch. d. Heilk.* xiii. 272) finds that the simple syrup is the best solvent for apomorphia for subcutaneous injection. He thinks that solutions which have become green have lost their activity; but this Kohler (*Schmidt's Jahrb.* clv. p. 19) denies.

T. LAUDER BRUNTON, M.D.

## OBSTETRICS AND GYNÆCOLOGY.

SIMON ON THE MANUAL RECTAL PALPATION OF THE PELVIS AND ABDOMINAL ORGANS.—Dr. Gustav Simon (in *Götschen's Deutscher Klinik*, No. 46, 1872, as also in *Arch. für Klin. Chir.* vol. xv.), describes his method of exploring the pelvis. The patient is placed on the back, either in the lithotomy or ordinary obstetric position; chloroform to complete insensibility is given; and then first two, and subsequently three and four fingers, are passed gradually in by a rotatory movement. Bimanual manipulation is enjoined, the other hand being pressed over the abdomen. Tearing of the sphincter seldom occurs if care be taken, and the operator's hand be not too large; some temporary, but no permanent inconvenience may follow.

The examination is useful for all cases of disease of the pelvic organs, especially the uterus, ovaries, and broad ligaments, and of the bladder (in men) as also for tumours in the lower half of the abdomen. In midwifery, it is likely to prove very useful. The first cases examined were: vaginal fistula, cancer, ovarian tumour, and fibro-myoma of the uterus. No incontinence whatever ensued, the explorations being repeated three to five times.

MONTI ON CONSTIPATION IN CHILDREN.—Dr. Alois Monti (in the *Wien. Med. Presse*, xiii. 26-28, 1872) contributes an exhaustive paper on this subject. He thinks it due to the defective development of the muscular tissue of the intestines, and to the peculiar form of nourishment at this period. He sums up the various causes:—1. Mechanical impediment, as in congenital deformity, imperforate anus, invagination, hernia &c.; 2. Defective nourishment, as from congenital defects of the lip and throat, too little secretion of milk, &c.; 3. Faulty nourishment, as from excess of casein or defect of fatty matters in the milk, bringing up by hand, starchy food, &c.; 4. Deficiency or diminution of the peristaltic movements of the intestines, atrophy, &c.; 5. Diminution of the intestinal secretion, as in long-continued diseases in consequence of anemia. Constipation is further a symptom of diseases of the brain and spinal cord; also a consequence of deficiency of drinks, of the use of astringents, presence of ascarides, fruit-stones, &c.; and, in older children, it arises in consequence of deficient bodily exercise. The cause suggests the remedy—cod-liver oil and enemata of cold water, mineral waters, manna, &c.

SCHLESINGER ON REFLEX MOVEMENTS OF THE UTERUS.—Dr. Schlesinger (in *Stricker's Medicinische Jahrbücher*, 1873, vol. i.) recounts some interesting experiments, undertaken with the view of ascertaining whether uterine movements may be induced by the reflex excitation of the centre. His conclusions seem to prove that they may be. 1. Electrical irritation of the central end of a spinal nerve induces general and energetic uterine movements in five to fifteen seconds; so does irritation of every nerve containing sensory fibres—as the vagus. Thus is explained the so-called mammary sympathy. 2. There is no reflex connexion in the spinal cord between sensory nerves and uterine motor nerves. The centre must, therefore, be in the encephalon only. 3. The tract which the motor impulse traverses to reach the uterus is not the vagus or the sympathetic, but (for some distance) the spinal cord; and in regard to the abdominal and pelvic nerves, the aortic plexus is a powerful, but not the sole conducting nerve to the uterus, some of the sacral nerves probably sharing in this function.

ROTHMUND ON THE TREATMENT OF PRURIGO AND PRURITUS BY CARBOLIC ACID.—Dr. Rothmund (*Erztl. Intelligenzblatt*, 39, 1872) states that the internal administration of carbolic acid in pruritus excels every other method. He has tried also the hypodermic injection of it with marked success, there being no local irritation produced as one would expect beforehand. Solutions of pure carbolic acid seem to be more efficacious than those of carbolate of soda.

ARTHUR W. EDIS.

## RECENT PAPERS.

- Clinical Lectures on Prolapse of the Womb. By W. H. Goodall, M.D. (*Philadelphia Medical Times*, Nov. and Dec. 1872.)
- Personal Reminiscences of Statistical Research. By Robert P. Harris, M.D. (Points out Errors in the published Records of Mortality from Cæsarean Operation.)—*Ibid.*
- A Study of the Chronic Diseases of Puerperal Origin. By Dr. Auguste Ollivier. (*Archives Générales de Médecine*, Jan. 1873.)
- Multiple Births; Abnormal Presentations. By M. Virigier. (*Gazette des Hôpitaux*, Jan. 11, 1872.) Ten pregnancies; presentations mostly abnormal (feet or breech), attributed to pressure of a basket carried on the left side of the abdomen.



PUBLIC MEDICINE AND  
EPIDEMIOLOGY.

PETTENKOFER ON THE DIFFUSION OF CHOLERA IN INDIA (*Continued from p. 29*).—In the fourth section, the question of the Influence of Human Intercourse on the Diffusion of Cholera in India is discussed, the conclusion being that this influence is very slight. 'It cannot be contested that the behaviour of cholera in India agrees much more with the miasmatic than with the contagionist view.' 'The natives never run away from cholera patients, but only from cholera localities; nay, more . . . they take along with them from the choleraic locality those sick and dying from the disease.' Dr. Murray's description of the outbreak of cholera among the Hurdwar pilgrims in 1867 is discussed at length; and it is concluded 'that persons leaving an infected place, as the result of infection which had already taken place in that locality, sicken on the way or on the march, and that such intercourse can possibly contribute to the spread of cholera in such districts and localities as furnish the local and seasonal predisposition for it, but that in others it cannot do so.' Attendants upon cholera patients do not contract cholera unless the place or building have become infecting, in which case the locality should be abandoned. Finally, Bryden's remarks on the contrast which exists between the course of a contagious fever like jail typhus, the mortality from which gradually rises to a maximum and then as gradually declines, and that of cholera, the mortality from which attains its maximum in the first few days and then gradually declines, are quoted with approval. After this, it is not surprising that in the next section our author professes very little belief in the efficacy of quarantine regulations. Disinfection is hardly discussed at all; latrines are not looked upon as affording any special facilities for the communication of the disease, and drinking water (to which the eighth section is devoted) is considered to have very little influence, and certainly not to be a necessary factor in its spread; of one of the best established cases it is said that it 'conveys absolutely no proof at all to those who do not already believe in the influence of drinking water.' It is urged that, even were it shown that the use of a particular drinking water was necessary to cause the spread of a cholera epidemic, we should still require to know 'why the drinking water only acquired this property in certain places and at certain times.' The case of the Broad Street Pump is even disputed as affording evidence in favour of Snow's theory; for, from the rapid decrease in the number of cases, Pettenkofer concludes 'that the cholera would have ceased, even had the well not been closed by the police on the 8th of September.'

The length of the period of incubation is briefly discussed, instances being given of bodies of troops who were exposed for one day in an infected locality, and among whom the disease afterwards appeared; it would seem that a period of three days is about the minimum time of incubation.

Change of locality then passes under review. This has always been resorted to, though with very variable results, 'for it is possible to pass from better to worse in such changes of locality.' However, there are the most unequivocal instances to show that, when cholera breaks out in a place, all who can should go away, and that the most beneficial re-

sults have frequently been obtained by this plan. Although they take cholera away with them, and although fresh cases occur during the next few days, the disease will not spread unless the locality to which it is taken be a suitable one. *Say, will not spread at all, from them. Should rather*

With regard to the duration of cholera in troops on the march, Bryden has shown that for the native regiments 'the minimum duration is nine days, the maximum twenty-two, and the mean thirteen; an entirely similar space of time to that given by our investigations on the average duration of deaths in the individual houses of an epidemically affected locality, or in house epidemics;' by the 'duration of cholera' is here meant the time during which fatal cases occurred, reckoning from the first case.

In the section on 'Cholera on board Ships,' Pettenkofer maintains that 'a ship can as little ever undertake the part of the soil in the cholera-process as the human beings in it; cholera on board ships is always conditioned by, and dependent on, antecedent processes on shore.'

Bryden's description of the outbreak of cholera on board the *Renown*, which left Gibraltar on August 21, 1865, cholera having appeared there on the 19th, is given at length; and it is pointed out as a very important fact, that the period of maximum intensity of the outbreak on board coincided exactly with that in the Gibraltar garrison. Bryden says, 'It may be suggested that this cholera was latent in the individuals attacked, or that the vessel sailed into a cholera-bearing stratum of air a fortnight after leaving Gibraltar. Neither possibility has any degree of probability attached to it. The germ was evidently brought on board with the wing.'

The investigations made by Cuninghame and Bryden into the statistics of this matter are quoted; the several results being that, among ships leaving Calcutta for America and Mauritius, 16 or 17 per cent. were attacked with cholera, only about an average of 1 per cent. of the passengers being affected: 'on the average, in every cholera-ship there are 370 passengers and four cases of cholera.'

This shows how very unfavourable to the spread of cholera are the conditions on board ship, and warns us to hesitate before rejecting the theory of 'the indispensable part of the soil in the cholera process,' on account of the numerous cases of cholera appearing on board ship.

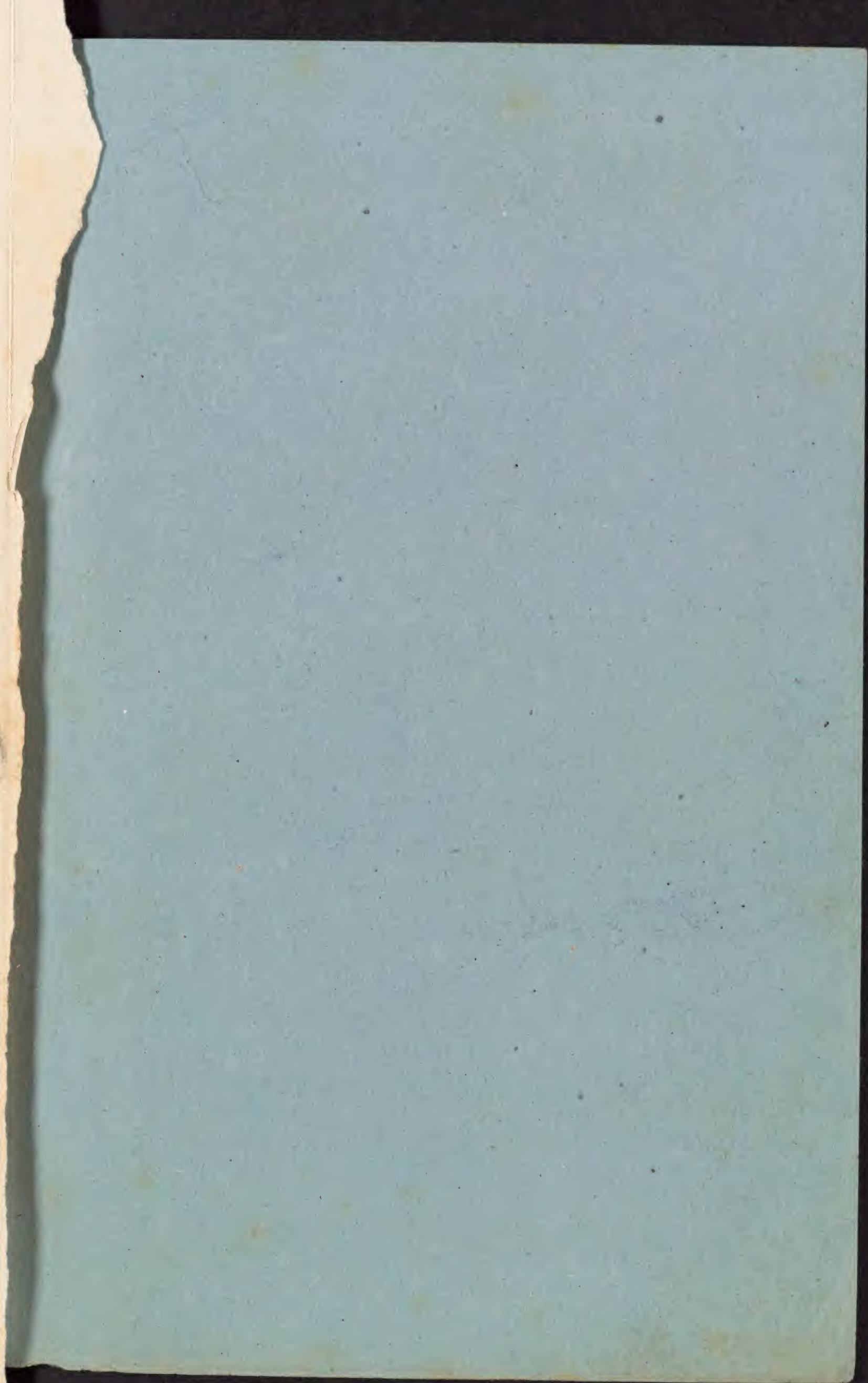
In a short section on 'Individual Predisposition,' we are told that among the troops 53.68 per 1,000 of the Europeans, and only 4.11 per 1,000 of the natives, die from cholera during epidemics. This difference is probably due to race, for the hill tribes of the Himalaya, the Goorkhas, who are Hindus, and have all the customs of the inhabitants of the plains of the Ganges, but are of a different race, are almost as susceptible as Europeans. But 'acclimatisation or accommodation' has a good deal to do with it, for recruits newly arrived from England suffer more than any others. Travellers in India, whether civilians or soldiers, are, according to Macpherson, specially prone to cholera, and this is true even of natives.

W. H. CORFIELD, M.D.

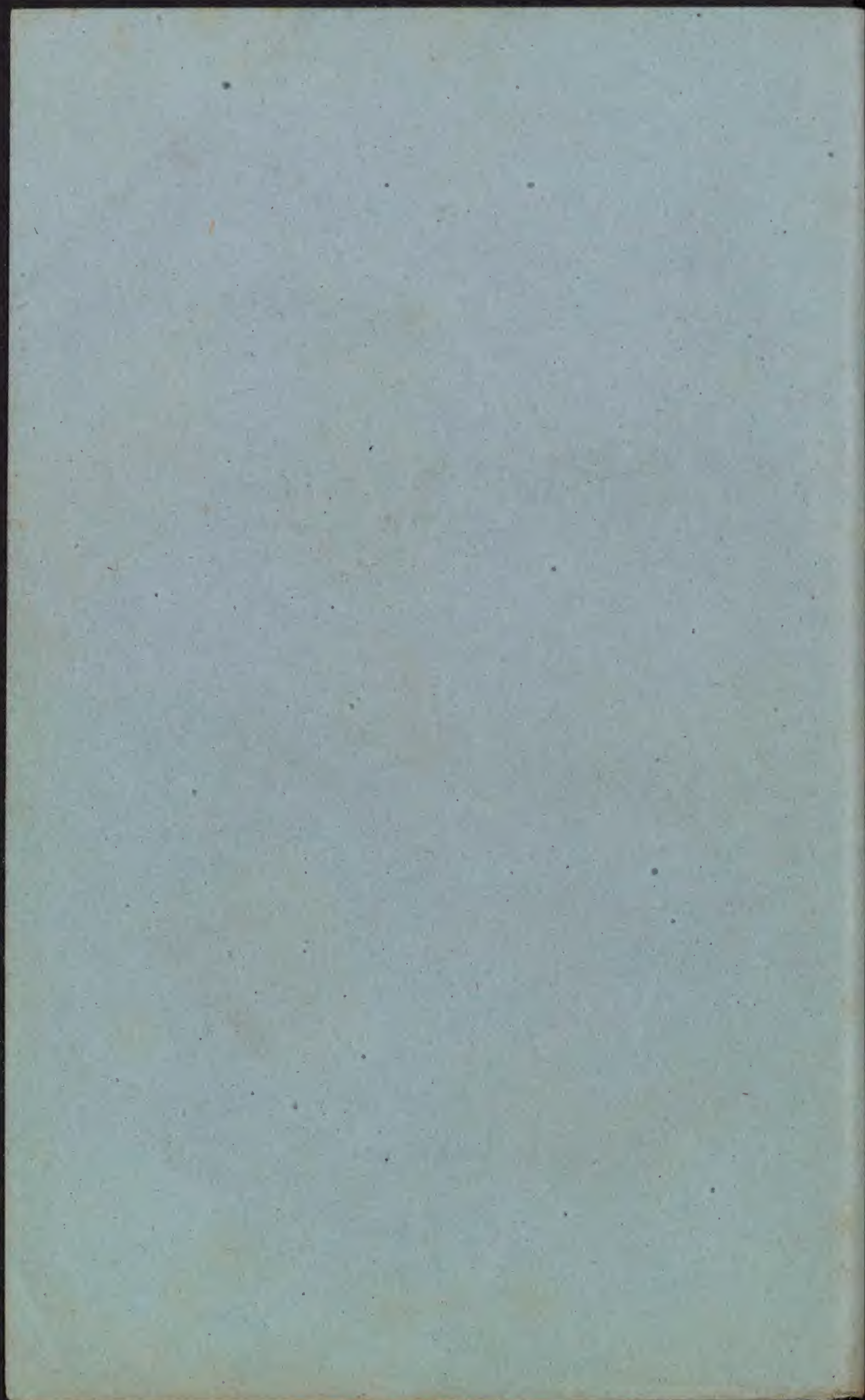
(To be concluded next week.)

M. CYON, honourably known for his researches on the nervous system of the heart and other subjects, has been recently nominated Professor of Physiology in the Medico-Chirurgical Academy of St. Petersburg.











# Causation of Phthisis.

1. Hereditary tendency is frequent, but not indispensable.
2. Promotive causes are: Breathing habitually a <sup>foul</sup> close atmosphere. <sup>(Indians & Alaska)?</sup> Dampness in locality of residence. Deficiency of food, especially fat food. Insufficient clothing. All excesses, and other causes of debility. ~~Attacks of~~ Attacks of bronchitis or pneumonia. Sometimes Resorption of caseous matter; as from scrofulous glands. Probably <sup>sometimes</sup> transmission <sup>those of</sup> from the lungs of a Consumptive to a person breathing the same air constantly. ✓

Cold is not a direct cause of consumption. More cases & deaths in Tennessee than in Minnesota. The cold climate of Minnesota is found to be especially favorable to recovery from incipient phthisis.  
(Relation of inflammation to tubercle.)  
(See next paper, other back of this.)



The pathological questions remaining open, — the solution of which is also necessary to our understanding fully the causation of phthisis, — are chiefly these

1. Are both the semitransparent milium granulations and the yellow caseous infiltrations, properly to be called tubercular, or only one of the two; & if one, which is tubercle?

2. Does one of these precede the other always, & produce it; — & if so, which is prior to the other? — many?

3. Does inflammation always produce tubercle, or tubercle produce inflammation? — only

4. Does hæmoptysis produce tubercularization, or tubercularization hæmoptysis?

5. In fine, is phthisis merely a caseous pneumonia? — With Prop. Flint & Alonso Clark, I would say, no.

Dr Cordie, in the April no. of Am. Journal of Science, has a sensible article on a part of the subject. He shows that it is most reasonable to believe that there are in most cases of phthisis, 2 elements: one, the tubercular diathesis, & usually, tubercular deposits as the first local occurrence; — a chronic, slow affair, only killing after perhaps many years: the other, acute or subacute

constituted in others: also, in the tubercular deposit. In some cases, however, the tubercular deposit is not preceded by inflammation, but the inflammation does, & often does, precede the tubercular deposit.



Causation of Phthisis

Inheritance — palpably common

But, not always shown

then, in the lungs, originated?

all <sup>the</sup> causes ~~not~~ known <sup>swarm with</sup>  
<sup>bad air, deficient food, seden-</sup>  
<sup>tary confinement, absence of light,</sup>

Some are debilitating <sup>excesses of all kinds.</sup>

Boudeloque, Carmichael

Other (on Scrophula) —

See Jas. Clark on Phthisis,

as well as Arnott, ~~Campbell~~

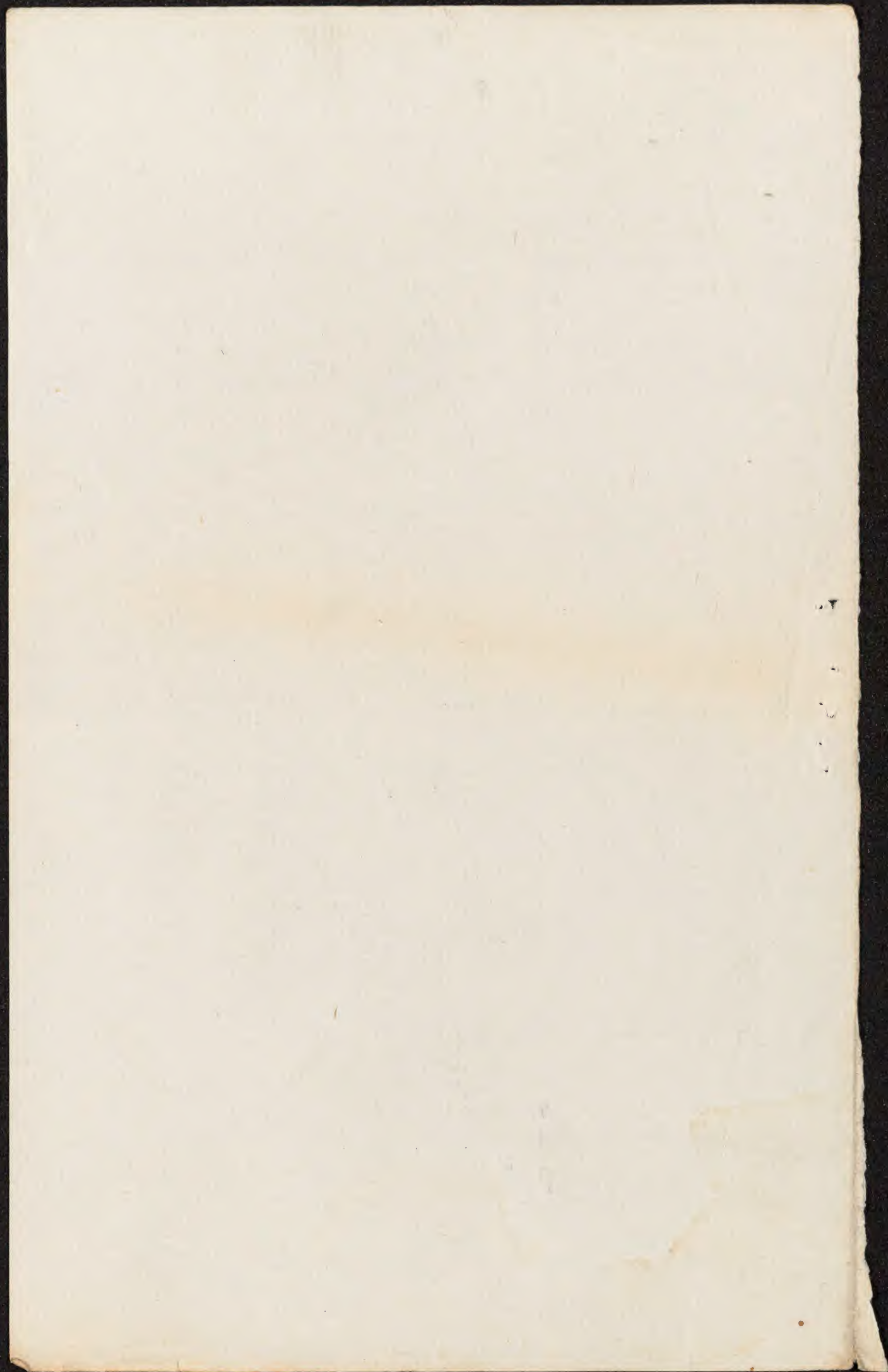
McPormac, <sup>Parkes</sup> others have shown

by many instances, the striking

promoting effect of confined

air, acting thro long periods.



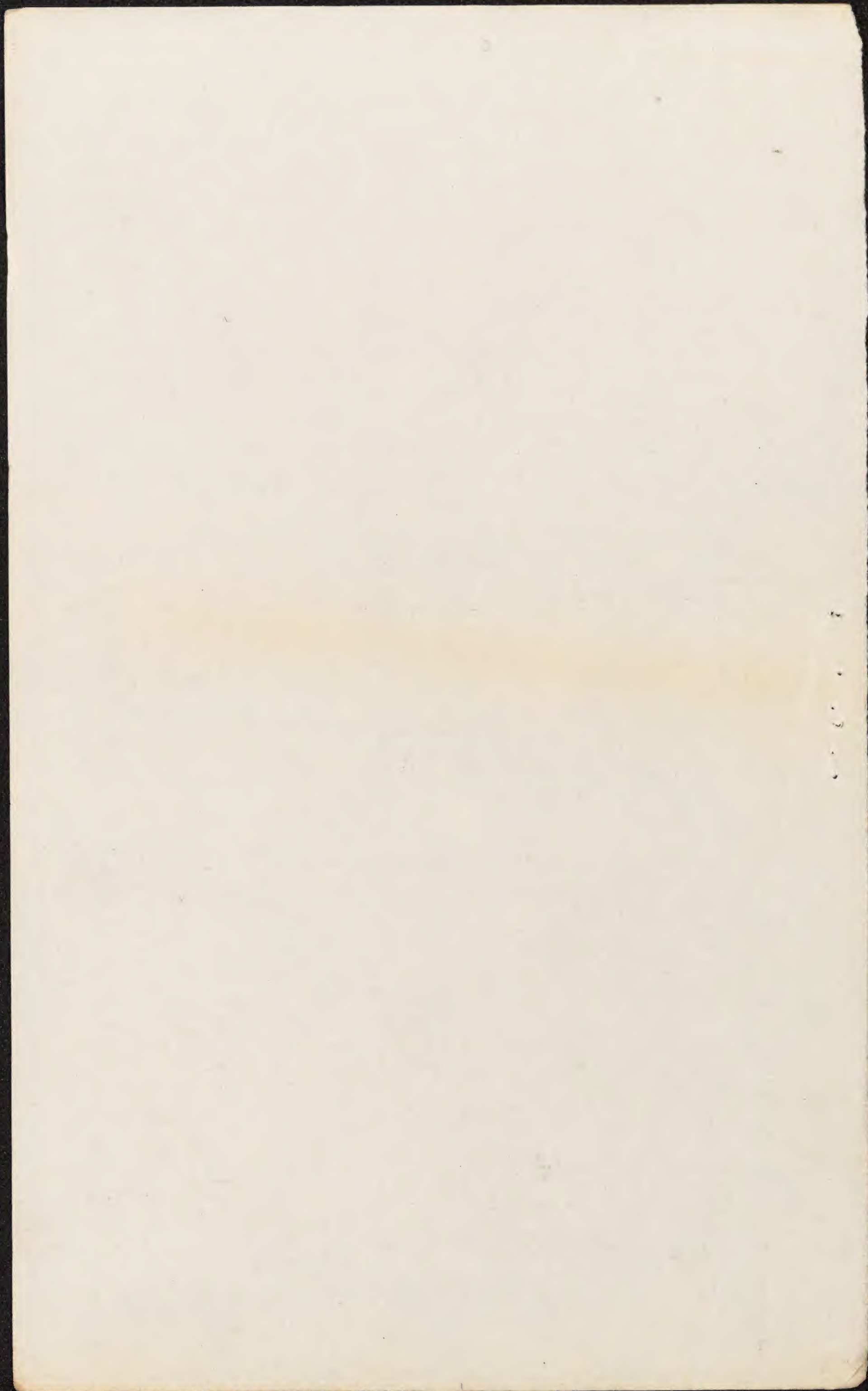




Thus, for example — in  
one prison in Vienna (Seco-  
<sup>ill-ventilated,</sup> polidast), <sup>(1834-47)</sup> in 13 years, of the  
whole mortality, more than  
50 (51.4) deaths in 1000 were  
from Consumption: while  
in the House of Correction in  
the same city, — well aired,  
only 8 (7.9) deaths in 1000 of  
the whole mortality occurred  
from phthisis. (So too in  
E. Indian jails)

And ~~amongst~~ French, Prussian,  
Russian, Belgian & English ~~holding~~  
Consumption is very prevalent, accounts  
for chiefly by bad construction & arranged  
barracks.







The number of deaths per  
captivity in the British troops  
is especially remarkable.  
(I only explain the just  
mentioned cause) in some  
of the most salubrious climates  
in the world; as in Malta,  
Gibraltar, Ionica, Bermuda.

So, too in the British  
Navy. I know of some  
ships than others. Dr. Bryson  
~~has~~ ~~never~~ ever thinks that a  
kind of contagion of phthisis then  
itself on board ships. It has been sug-  
gested that perhaps two cells pass from one to another  
through the air.



\*  
A Villmer — Leber — Waldenberg —  
Burdon Sanderson — on inoculation.

Virchow, Oppolzer, Kerner —

New pathogenesis of Consumption —  
Caseous formation & resorption generally secondary tubercle  
so that consumption may be only caseous pneumonia — or also tuberculous.  
Difficulties, especially about children —

Much caseous disease — little tuberc. phthisis

I cannot but hesitate, with Prof Austin Flint  
& some others, about accepting these views in  
their totality; though some important new groupings  
of facts have, no doubt, been elicited lately.

Resorption may, ~~sometimes~~, probably does, sometimes  
occur; caseous broncho pneumonia first, — infiltrated or  
miliary tuberculation attends; but I do not believe that  
resorption always precedes caseous tubercular deposits.

Precipitation; from lowered vitality, &  
obstructed blood-change: thick blood!  
So not foul air — & dampness — & inflammatory pulmonary disease,

fall causes of constitutional depression — causing low vitality.



monkeys — & cows in loose stables.

(mon rabbits)  
~~Willems & Libby's vocalizations recently.~~

Elevation (A. K. Johnston)  
& Torres  
U. S. & State.

Burkman  
Bowditch dampness of locality. Forney<sup>2</sup>

Certain<sup>\*</sup> all that depresses  
organic energy, — that interferes  
~~with~~ with the nutrition<sup>& repair</sup> of  
the tissues of the body, either by  
depriving the blood of <sup>nourishing</sup> ~~plasma~~  
material, or by preventing its  
purification by free exhalation  
& excretion — will promote phthisis.  
Most <sup>with</sup> <sup>because</sup> this if gradual & customary.  
But <sup>the</sup> importance of skin action in pre-  
venting & retarding tuberculosis tuber-  
culosis, I believe to be too much overlooked.



Candie

Turbule -  
vey chinu . -

2

Pneumonia.

acute or subacute.



Since etiology stands <sup>as remarked before,</sup> in necessary relation  
to ~~both~~ hygiene & pathology, - it appears  
to me appropriate to consider <sup>here</sup> briefly, as I  
have been doing, the main bearing <sup>some of the</sup> of late  
investigations upon the origination of phthisis.  
I may remind you that Laennec taught  
that tubercle is the specific product of a  
diathesis; - there being 2 kinds of tubercle, -  
the miliaary semi-transparent and the yellow  
infiltrated; and that the deposition of tubercle  
in the lungs or elsewhere is <sup>their</sup> the cause of functional  
obstruction and inflammation. Andral took about  
the same view. Broussais regarded the yellow  
infiltration as certainly inflammatory in origin,  
& inferred that the <sup>other</sup> ~~other~~ must be so too. Andral,  
Cruveilhier, Addison, Condie and others have  
recognized from time to time the importance of  
inflammation as an element or factor in the  
history of consumptive disease. Rokitsansky  
adheres to the belief that both the semitransparent  
granular and the yellow opaque caseous  
forms ought to be considered as tuberculous ex-  
udates. Virchow, Thierard & Cornil assert that  
only the miliaary granular matters, both transparent and



opaque, are really tubercles. (2)

In 1857, Buhl first published his theory of the resorptive origin of phthisis: yellow infiltration being thrown out first, and then absorbed, producing the semitransparent granular tubercles:— involving the idea of a specific tubercular virus.

Wiemer accepts the theory of the dependence of miliary tubercle upon the presence of caseous masses;— but without so boldly predicating the nature of the connection. This order of sequence is, — catarrhal pneumonia, — caseous infiltration, (itself making one form of consumption), — & then secondary formation of tubercle. This is well illustrated in his now famous sentence, — "The greatest danger for the majority of consumptives is, that they are apt to become tuberculous." This is certainly at the other pole from Laennec. I will not dwell now <sup>as to</sup> on the inoculation experiments of Villermé & others, — which, as said before, have not proved, — but have even disproved the specific inoculability of tubercle. ↓  
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